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VOL. XXI. No. 2

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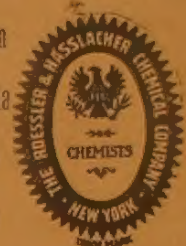
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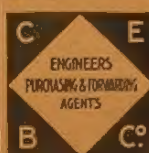
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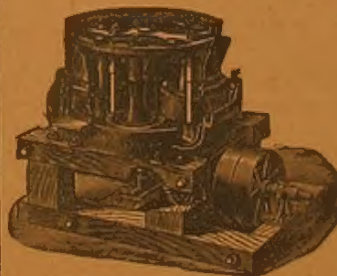
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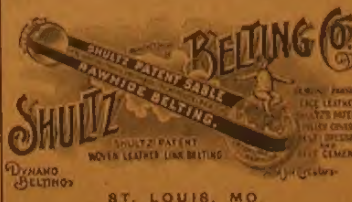
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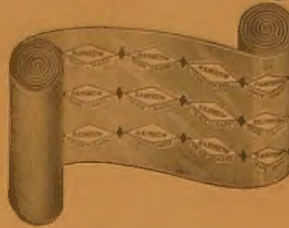


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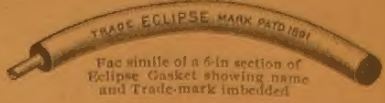
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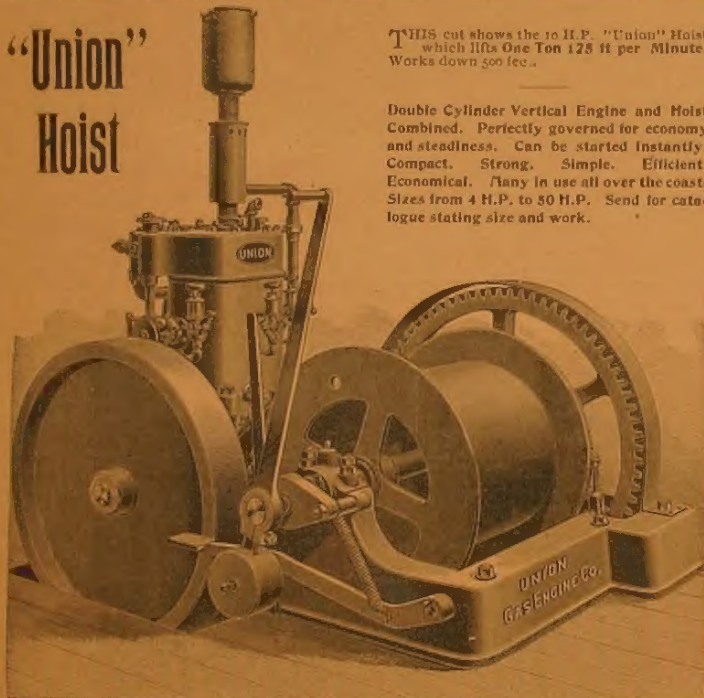
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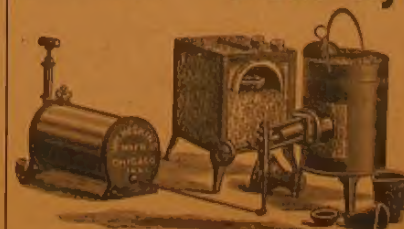
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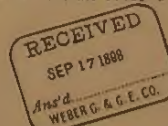
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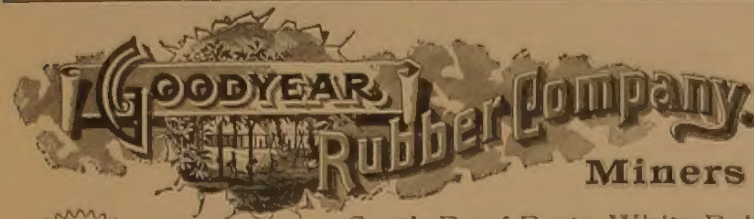
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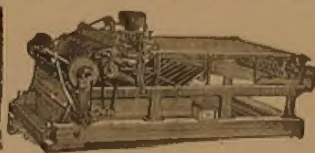
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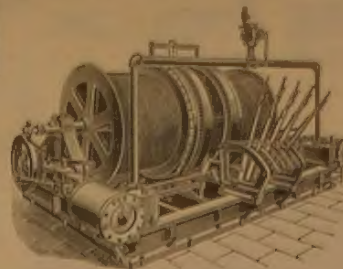
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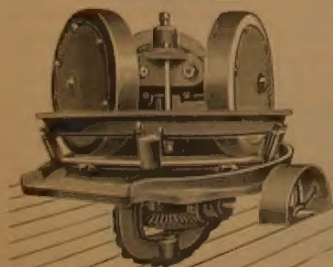
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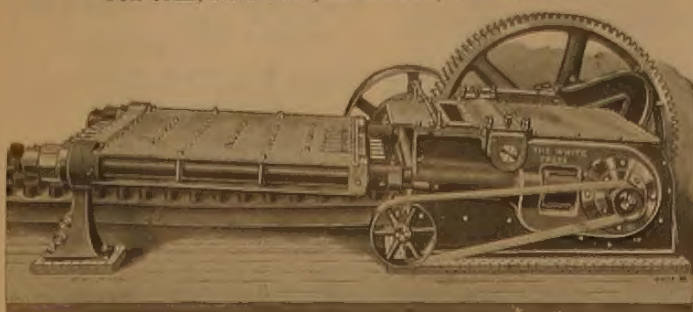
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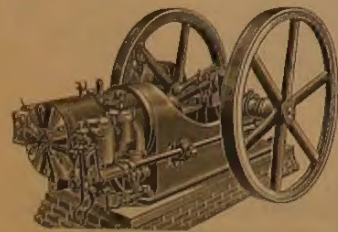
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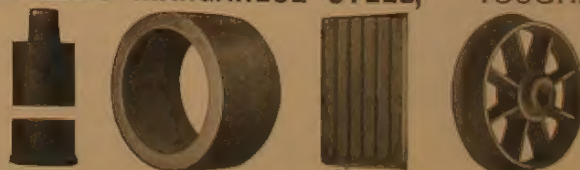
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ISSUED SEMI-MONTHLY

ADVERTISING RATES FURNISHED ON APPLICATION.

THE CALIFORNIA STATE MINERS' ASSOCIATION.

The good results which have been accomplished by this association as outlined in the *Mining and Scientific Press* of 24th December, 1898, was in the first instance organized to secure justice to the hydraulic miner from the opposition of the agriculturists in the lower valley lands who obtained legislation which killed the hydraulic mining industry which had given to the agriculturists their first and best market, and in fact gave the agricultural land in early days its value. Through the efforts of this association restraining dams have been constructed in many places, and the hydraulic miner, under these improved conditions, has been permitted to work in many instances. The next fight undertaken for the benefit of the State's mining interests was waged against the wholesale plunder of the miners' birthright, which are the rights pertaining to working the minerals of the country, as opposed to the granting of the minerals under the misnomer of Railway Land and Grants, and the end of the fight is not yet in sight. In advocating the appointment of a cabinet position for a Secretary of Mines and Mining, so as to give the attention and prominence which this industry demands as one of the country's chief sources of wealth. The oversight of the proper representation of California's mineral industry at the Paris Exposition of 1900 and in securing the necessary means for that purpose. Both State and Federal legislation affecting the mining industry has had a prominent place in the work of the Association. The proposed formation of a Southern California Branch is particularly necessary at this time, when the important subject of laws to regulate and of ways and means for the storage of water in mountain and desert sections has been undertaken as part of the Association's work. If for this cause only—and there are others—the miners of the southern counties require as

strong representation to secure for themselves some of the benefits and share of the improvements which must result from the united action of the combined influence of the mining fraternity when they all combine with one purpose in view. The Association has already secured the needed government aid for the construction of dams for the hydraulic miners of the north and they can again obtain such aid for the storage of water for the miners of the south. It is therefore in the interests of all the mining districts in the southern counties to send large and influential delegations to join in the organization of this branch association to be held in the hall of the Chamber of Commerce, corner 4th street and Broadway, on Saturday the 29th of April, at 8 P. M.; entrance to hall on 4th street.

CALIFORNIA STATE MINING LAW.

During the recent session of the State Legislature important bills were passed by both the House and Senate, the first of which has not, however, become a law, for some as yet unexplained reason, on account of not having the State Governor's signature appended thereto. That act was known as Assembly Bill No. 712, being a substitute for Assembly Bills Nos. 18 and 173. This act was framed by Assemblyman Mack of Inyo county, an attorney-at-law of much mining experience, and introduced by the Committee on Mines and Mining and contained many good provisions intended to make the late State act more effective and less troublesome to those locating claims, but unfortunately it did not become a law.

The second act, which did pass and receive the royal mandate of the Governor and has unfortunately become a law of the State is Assembly Bill No. 140, of which the following is a copy:

An act to repeal "An act prescribing the manner of locating mining claims upon the public domain of the United States, recording notices of locations thereof, amending defective locations, and providing for the deposit of district records with county recorders, and prescribing the effect to be given to recordation of notices of location and affidavits." Approved March 27th, 1897.

The people of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1. An act to repeal "An act prescribing the manner of locating mining claims upon the public domain of the United States, recording notices of location thereof, amending defective locations, and providing for the deposit of district records with county recorders and prescribing the effect to be given to recordation of notices of location and affidavits," approved March twenty-seventh, eighteen hundred and ninety-seven, is hereby repealed.

SECTION 2. This act shall take effect immediately.

Approved March 20, 1899.

Though the wording of the act is such that it defeats itself, it no doubt will hold good, and by it the late State law of 27 March, 1897, has been repealed and the above first-mentioned Bill No. 712, which was intended to take its place having failed for some inscrutable reason to receive the signature of Governor Henry T. Gage, has not become a law, and the only laws in force at present are the Federal Statutes. Two years' trial of the late State law has proved its value in preventing the holding of mining claims without working the annual assessment, but by an oversight, mistake, or willful disregard of the

best interest of the development of mineral territory, on the part of the present Governor or some one under him, that law has been repealed and no substitute passed. As the present Governor is interested in mining, it is only just to have his views on the subject before making a charge of personal neglect on his part. If the excuse for not signing Assembly Bill No. 712 is that it is not a perfect piece of legislation, we would remind the Governor that perfection is only to be found in the dictionary, but not in mines, or laws and lawyers governing them, as recent acts show.

THE MINE BOSS OR FOREMAN.

The position of mine foreman or underground boss, is one of great responsibility, and requires, along with experience in working miners, other special personal qualifications. Good judgment and an even or well-balanced mind, with complete control of temper at all times, and the happy ability of gaining and holding the confidence and respect of the employees, are necessary. There is a mine about fifty miles from Victor, San Bernardino County, California, at which these necessary conditions are sadly wanting. An accident some time ago happened through which a miner was killed, by a piece of timber being accidentally let fall in the shaft. Report goes that this accident was due to a display of temper which was responsible for the sad and uncalled for result. Unfortunately there is no mine inspector in California to examine and report into such cases, and it falls to the lot of the mining papers to take the matter in hand for the better protection of the miners employed. There is no excuse for a prosperous company to retain such an employee in their service. Good, competent men can easily be had to fill such a position, and the owners are in consequence the parties who suffer a loss, as good men will not work under such an incompetent and irresponsible leader. Should another accident of this kind happen, they will be responsible after having been notified of the condition of affairs.

AIDS TO PROSPECTORS AND MINERS.

The capability of the prospector, in regard to the requirement to correctly name different kinds of rocks and minerals is the greatest test of his mineralogical knowledge. As certain rocks are found associated with certain ores and minerals in paying quantity, a knowledge of rock formations is essential to intelligent prospecting. Prospectors' manuals, guides and handbooks generally give a chapter or two on the determination of rocks and minerals. To the young prospector, or to one who has had but little experience in the practical part of mining, which is the sorting or extracting of ore, to him the mineral contents of ore bodies and veins are a serious puzzle, and often tax the ability of those of still greater experience. Even experienced miners and prospectors, when in a new district or class of minerals with which they are not familiar, are often at a loss to give the correct names to the rocks and minerals met with. Two reasons may be given for such a seemingly unwarranted display of ignorance. The surface or altered condition of rocks and minerals due to weathering or atmospheric change, and the close resemblance which many rocks and minerals have to each other. The study of such guides by prospectors and miners, along with elemen-

tary works on geology and mineralogy, is a good means of educating the memory to retain such necessary details in connection with their calling, which may at some unexpected moment advance their business interests. When such reading is practiced aloud it educates the ear to the sound of the names met with, and enables the memory to retain such knowledge better than if only the eye glances along the lines. As impressions made on the mind through the vision are more lasting, and at the same time create more thought than those made from hearing or through the medium of the ear, and as the eye is the chief organ which is used in the search for and detection of minerals, the young prospector can best gain acquaintance with strange and rare rocks and minerals by purchasing a correctly-named and classified collection of typical rock specimens and ores of the common and rare metals and minerals. A combined study of such reading matter, accompanied by the close examination of the rocks and minerals illustrated in a correctly-named collection, educates the eye and makes the description in print perfect and more easily understood and remembered. Such knowledge can also be gained by visiting museums and institutions where minerals are classified and on view, and, consequently, such exhibits have an educational value as well as the desirable object of developing the mineral resources of the country.

THE FINANCIAL OUTLOOK.

The transactions in Wall street are no indications of what is the real conditions of business in general. Nothing is done there that adds to the production of wealth. It is merely swapping jack-knives on a ponderous scale. Those who form judgment from such transactions will be liable to be misled in regard to the prosperity of the country.

It should not be overlooked that the trusts have listed in the stock exchange a vast amount of stocks, more or less of which is fictitious, and that this increase thrown upon the market enlarges transactions. The first effort is to boom stocks by creating florid expectations, and it is easy to do that, as there is a considerable degree of activity in certain industries. High development of the speculative spirit inevitably leads to reaction, and is ordinarily the precursor of panics.

In the last fiscal year, imports from foreign countries were less in proportion to consumption in this country than usual and exports were larger, arising from an inordinate demand abroad in American products. These caused a very large balance of trade in our favor, and a comfortable increase of gold. The people were exhilarated over these results, which gave greater stimulation to speculation than to industrial growth. This is shown in the immense number of trusts that have been formed and in contemplation. The formation of trusts does not augur well for an increase of wealth production, for the object is to so limit it that there shall not be a surplus but a deficiency rather, that prices may be enhanced to consumers and profits enlarged to trust producers.

Already conditions in regard to foreign trade have commenced to change towards the unfavorable side. During the last quarter, imports from foreign countries have increased and exports have fallen off. While an increase of imports adds to revenue receipts, it affects the balance of trade unfavorably, more especially when not offset by an increase of exports. It also affects our money volume,

in that if it does not diminish the volume, it does not enlarge it, as it would if the balance of trade were kept up. There is not that demand in foreign countries for breadstuffs and provisions which prevailed during the preceding months. The price of wheat has declined and also of the other cereals, which is injurious to agriculturists, who contribute more largely than any other class to national wealth. There is also a diminution in the exports of manufactures, showing either that home consumption has increased, or that manufacturing as a whole has decreased.

The fact is, the American people are confronted by very serious industrial and financial problems, the solution of which will be made by them at the presidential election next year. These problems are under consideration and discussion now, and there will be no cessation till the 1st of November, 1900. The trust question is not the least serious. If not arrested, the trust mania will produce a universal monopoly, crushing competition, wages, and the prices of raw materials, and enhancing the prices of manufactured commodities to consumers. It promises to be a battle royal between the people on one side and the trusts on the other.

Auxiliary to the trusts and money syndicates is the contemplated revision of the money system. We speak not of the coinage feature, but of that which relates to the supply of paper currency. The American people favor paper money based upon coin redemption, on account of convenience in its use. One of the contemplated changes is the retirement of government issues, and the substitution of bank notes, and it is a radical change of the banking laws.

There have been many suspicions of loss by the holders of the notes of national banks, because the government guarantees them, and is itself secured by holding its own bonds on deposit as its security. Though there have been numerous failures of national banks, no bill holder has ever suffered.

The proposed change is that ultimately bank notes shall have only the security of the assets of the banks, and that they shall be redeemed by the banks in gold coin. This will necessarily limit the volume of notes to an amount which the banks can redeem. What ratio they will be permitted to issue, on the basis of the required reserves, is yet to be fixed, but probably it will be a liberal one. The banks will also control the feature of elasticity. When times are flush for their own interests they will issue liberally, and contract when times are hard. The bill holder, with no security but the bank assets, will easily become suspicious and lose confidence, which will precipitate a run upon the banks and a panic.

It is not our purpose to discuss this subject *in extenso*, but to throw out some hints and suggestions for reflection.

NOTICE TO EXHIBITORS.

All who desire to exhibit in the Paris Exposition of 1900 are requested to immediately notify the Chicago office of the United States Commission to the Paris Exposition of 1900, if they have not already done so, in order that they may be considered in the allotment of space which will soon be made. While there are many applications on file in every line of industry, it is desirable that the American sections be not only representative of this country but also represent the largest possible number of producers. Both our commercial interests and national pride de-

mand that our works be entered in this most important international exposition. It is estimated that fully 60,000,000 people from every part of the globe will attend, and it will be an opportunity to greatly increase our foreign trade and to demonstrate that the United States is supreme in the arts of peace.

SPECIAL RATES TO THE MINERS' CONVENTION.

Special rates to Los Angeles during the week ending April 29th have been made by the Santa Fe route. On the Southern California railway, which includes all points in Southern California on the Santa Fe system as far east as Barstow, the rate will be one and one-third fares for the round trip. Tickets will be sold on the 25th, 26th and 27th insts., good for ten days. On the Santa Fe Pacific, which takes in the Santa Fe system as far east as Albuquerque, the fare will be about one fare for the round trip. These special tickets will be on sale on the 24th and 25th insts., and will be good for thirty days.

The Southern Pacific company has announced similar rates and terms to the Santa Fe. From all points on the Southern Pacific system in Oregon, Nevada and Utah the tickets will be on sale April 22d, 23d, 24th and 25th, and from points in Arizona and New Mexico the tickets will be on sale April 24th and 25th, limited for the return trip to thirty days from date of sale.

The miners should take advantage of this rate to spend a week in Los Angeles. With the celebrations which are taking place during that week, a round of pleasure will meet the delegates who attend the Miners' Convention.

Iron Giving Place to Steel.

Steel has almost superseded iron in the manufacture of pipe and tubing, until it is estimated that almost 75 per cent of the product of the country is now made of steel. Up to a few years ago, wrought iron was used almost exclusively. The lap-weld joint proved a serious objection, and the change to steel has been rapid and complete. Steel pipe is stronger, has longer life and is less liable to corrosion. Steel tubing has enabled the bicycle industry to become revolutionized, and pipe forms a leading article in tonnage of the steel industry in this country and foreign markets.

Graphite, the publication issued by the Dixon Crucible Co., of Jersey City, N. J. says:—

Our sales for 1898 were far ahead of the sales of any previous year, and so far 1899 has proved to be better than the corresponding time of any previous year.

We know that business generally is better and that times are good, but we congratulate ourselves that we are reaping now some reward of our advertising and hard work.

It was noticeable during the dull times, especially in the latter part of 1893, when business slumped generally, that the Dixon Company did not discontinue any of its advertising, or cease to push for business in all directions.

We are in receipt at this office of a handy little Almanac, issued by *El Minero Mexicano*. Among the noticeable features we observe an Appendix which gives extracts of the Mexican mining laws, of which but little is known in the United States.

CAMMETT CONCENTRATOR.

The development of milling processes for the concentration of metalliferous ores has presented many opportunities for some successful design of concentrating table, which will give accuracy and capacity by the employment of simple mechanical details and a system of ore treatment based on well established laws.

No concentrator can be a complete system in itself, but simply one part of a series of ore treatments, devised after an intelligent study of the ore to be treated. The preparation of the ore, in the preliminary crushing by crushers, rolls or stamps, and subsequent classification is just as important as the separation of the values from the gangue on the concentrating tables itself. The experiments of Rittenger and in later years those of Robert H. Richards have shown that each size and quality of ore pulp requires a certain angle of inclination of the table surface a proper supply of water a correct speed of agitation, and a motion which best assists the laws of specific gravity. Hence it seems rational that a concentrating table embodying as many suitable adjustments as possible, should best meet the wide field of variations required in the successful treatment of pulps.

The Cammet Concentrator is presented as a result of a thorough and systematic series of practical tests. All the details have been decided upon after actual practical results, and the mechanical features of this concentrator are based on an accuracy of motion and a facility of adjustment which are acknowledged to be complete in every respect.

The main frame of the Table is made of best selected Oregon lumber, and framed to resist best the reciprocating movement of the table top proper. This frame, together with the upper working parts is supported on three heavy hinges under the head end of the table, and by means of adjusting hand wheels and screws, the table may be given any necessary inclination lengthwise the table. The discharge end of the table may also be adjusted by means of these adjusting screws, so that one corner at the end may be raised higher than the other, depending on the requirement of ore treatment. Hand adjusting screws, under the main frame about midway the length of the frame, serve to prevent any vibration whatsoever.

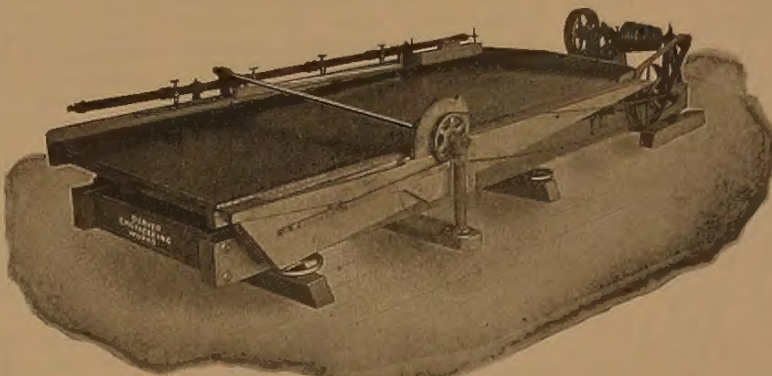
The table top proper is supported on nine

cold drawn steel guides running in cast iron bearings, and lubricated by compression grease cups. These guides are supported on cross beams, which are also supported on one end by heavy hinges, and on the other end by cams designed to give the requisite transverse inclination to the table top. This transverse inclination motion is controlled by a lever placed near the head of the table.

The head motion is a simple mechanical device which is capable of producing a great variation in the revolutions, stroke and character of the stroke. The revolutions may be changed by a four stepped cone from 250 to 350 revolutions per minute; the stroke adjustment is from 0 1½ inches length; and the quality of the end reciprocation is such that pulp may be carried forward at any speed from 0 to maximum. The end reciprocation is not a sudden jerk, but a very smooth motion, and is a particular motion peculiarly adapted to proper stratification of the pulps.

The pulp box is arranged with suitable partitions for delivering the pulp to the table in a manner well distributed.

The water is delivered to the table by means



GENERAL VIEW CAMMETT CONCENTRATOR.

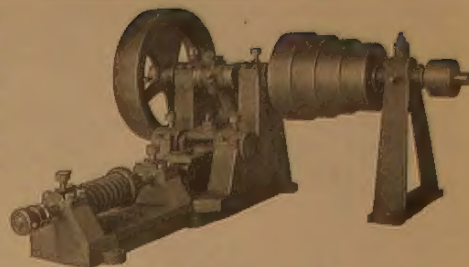
of perforated pipes in several sections, each section being controlled by a separate valve. The perforations of the pipes are on the upper side of the pipe.

Whenever a mill contains only one concentrating table, a return pump for the middlings is provided. This pump delivers the pulp, not into the main pulp box, but into a separate launder which is arranged to deliver the middlings pulp along a considerable range up and down the table.

The table top is made of selected redwood, in two layers, with a canvass, painted with white lead, between the layers of redwood to prevent leakage. Each layer of redwood is grooved on the under side to prevent any warping, and the construction proves to be successful. The entire table top surface is covered with a special design of continuous riffles and grooves extending longitudinally from the head end to the discharge end of the table. The entire surface of the table is painted with paint specially prepared for this work.

The floor space occupied by this Concentrator is seven feet by nineteen feet. With this table are all attachments necessary for the complete operation of the table and no expense is required to make table ready for running except that for labor of erecting.

To determine the power required to drive this table, a table was set up and run by an electric motor at the works of the Denver Engineer-



HEAD MOTION CAMMETT CONCENTRATOR.

ing Co., Denver, Colo., and the power delivered to the motor was accurately measured by proper electrical instruments. It was found that with all adjustments of the table put at their maximum, the power did not exceed 0.4 H. P. Under adjustments which would represent average working in practice, the H. P. did not exceed 0.25.

The pulp, after being properly sized in Hydraulic Classifiers is delivered onto the table by the pulp box at one of the head end corners of the table.

After giving a proper inclination both transversely and longitudinally, to the table top and a supply of water through the various water pipes, the head-motion may be adjusted to meet the requirements of a great variety of ore pulps.

The end shake of the table produces a stratification of the pulp which settles the values to the bottom of the grooves, and carries the mass along until the height of the riffles between the grooves diminishes, and the transverse flow of water washes the light top layer of gangue across the table sidewise to the tailings

launder. The heavier values proceed along the grooves without disturbance or change from a straight forward course, and are discharged from the entire width of the tail end of the table.

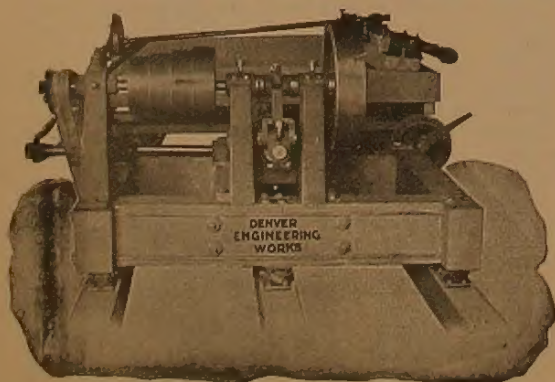
While this Concentrator will handle as coarse pulps as any of its class, it is extremely accurate in the saving of fine pulps. The special form of grooves which are employed seems to produce very successful results in keeping the fines from discharging with the tailings.

So perfect is the classification or separation produced by this table, that with a good class of ore, adjacent grooves of the table will contain products different from each other to such a degree as to be readily distinguished from each other by the eye.

Rich Gold at Whitehorn.

Rich free gold has been discovered at Whitehorn, Colo., on Cameron mountain, in a property of which a half interest is owned by Joe Newark and a half interest owned by the Woods Investment Company of Victor, Colorado. At 15 feet and in true fissure vein, free gold is found on Cameron mountain, 600 feet south of the Lily group and 2,000 feet east of the Independence and Cameron shafts. The gold is of a rich, bright color and very heavy, owing to its purity. Much excitement prevails throughout the district and many from the surrounding country are flocking in.

Attend the Miners' Convention, at Los Angeles, Cal., Saturday evening, April 29th.



END VIEW CAMMETT CONCENTRATOR.

THE COMING CAMP.

The Republic district, which has lately been introduced to the mining world and is at present the scene which is furnishing the mining circles with so many sensational strikes and new discoveries gives promise of developing into one of the greatest of gold camps.

No other camp in the northwest with equal development has produced such marvelous ledges, and none, it is believed will so astonish the mining world as this new district in Northern Washington.

The history of the Republic mine reads like romance, and, indeed, the truth in this instance is much stranger than fiction. The mine was located by some prospectors sent out from Rossland, B. C., in February, 1896, by James Clark, then superintendent of the War Eagle mine and two or three others connected with that property. In the early part of 1897 Patrick Clark, brother to James Clark, closed negotiations for the sale of the War Eagle mine at Rossland, he being the President of the War Eagle Co., to the Gooderham-Blackstock syndicate for \$700,000 cash.

James Clark and his associates sunk a shaft 60 feet deep in the Republic during the summer of 1896 and found some high grade ore. Patrick Clark came to what was then known as Eureka camp, but now as Republic, in the spring after he had sold the War Eagle mine, and he was so well pleased with the showing on the Republic that he purchased two interests for \$60,000 cash, and secured control of the property.

The Republic company was organized with Patrick Clark as President, and he has been the moving and controlling spirit from that day to this, as well as the central figure in the great Republic mining camp.

The active and systematic development of the Republic mine commenced in the fall of 1897, and the mine began to produce ore in the spring of 1898, since which time it has paid for over 7,000 feet of working above and below the second level, the entire cost of the mill plant, and has yielded in dividends \$150,000 to date. In other words this property has produced ore in less than half a year of over half a million dollars, and that in the face of almost insurmountable obstacles. There are few cases like this on record. At first the cost of getting the ore to the railroad was \$25 per ton, the additional cost of getting to the smelter was \$6, and the smelter charges about \$10, so that the total charges were in excess of \$40 per ton. Very few mines in the world can produce ore and stand such expense, but some of the Republic ore yielded nearly \$12,000 to the carload, and the average value of the shipping ore has not been less than \$4,000 per car. The Republic ore is the richest ever shipped from a mine in the northwest.

It requires several hours to go through the mine, but one is well repaid for the trouble. Although it has been producing ore for about a year, little ore has been taken out except what had to be in the necessary course of development. The only stopping to speak of has been done between No. 1 and No. 2 levels. The greatest showing of ore is below the No. 2 level, in what is called the "intermediate." Here the ore chute has widened out to 25 feet. The north end is in solid ore from side to side, and it is not known how far the chute runs in that direction. No stopping has been done above the intermediate, and it is all virgin ground above and below it, to say nothing of the north extension. It is nearly two hundred feet between No. 2 and No. 3 levels, con-

sequently there is room for a vast quantity of ore. On the No. 3 level no ore has been taken out excepting that taken out in cross-cutting the vein. We could extend the account of this wonderful property, but space forbids. Suffice it to say that the property has as yet hardly been touched, yet it is estimated that the mine has enough ore now in sight to enable them to pay one thousand dollars per day in dividends for six years.

The property has recently been sold to a new company called the Republic Consolidated Mining and Milling Co., with a capital of \$3,500,000, in which Canadian capitalists have become heavily interested.

The next property in importance is the Mountain Lion, which property enjoys the same prominence in the north end of the Republic camp that the Republic does south.

This property was located by one Arthur Best shortly after the reservation was opened. Shortly after its location Mr. Crown, the manager, purchased an undivided one-third interest for himself and a two-thirds interest for Mrs. Jonathan Bourne, Jr., of Portland, Ore. The mine is equipped with a 12-drill duplex compressor plant operating at the present time three drills, besides all the necessary buildings, etc., etc. We understand it is the intention of the company to erect a mill having a capacity of 100 tons per day. A series of milling tests has demonstrated that the ore of the Mountain Lion can be milled and 95 per cent of the gold values extracted at estimated cost of \$2.50 per ton.

Midway between the Republic and Mountain Lion is to be found the San Poil. This property has been extensively developed and is one of the coming mines of the camp.

The Lone Pine, located at the same time as the Republic and by the same prospectors, bids fair to equal, if not surpass, the famous Republic. The present development consists of about 130 feet of drift run on the ledge. Tunnel No. 1 is in about 250 feet, while tunnel No. 2 is now in about 160 feet. The average value of the ore is said to be \$50 per ton, although there is a considerable quantity of ore that is much richer, but a conservative estimate places the average at the sum named. This property is under the same management as the Republic; in fact, the board of directors is the same, as are also the officers.

While these four properties specially mentioned are the principal mines of the camp of today, there are several other properties that have equally as good showing, but have not been so extensively developed, notable among which are the Ben Hur, Princess Maude, Butte & Boston, Eureka Queen, Insurgent, Jim Blacktail, Quilp and Tom Thumb.

The main belt comprising this district is a porphyry zone running nearly north and south and covering an area approximately 20 miles long and from one to three miles in width. The general impression prevailing on the outside that it is broken and rugged and scored by deep canyons is erroneous; while it is surrounded by rugged mountains, the Republic belt, comparatively speaking, is a rolling country.

There are two or three known ledges paralleling each other running through the entire length of the belt. The veins which have been opened up at various places upon a large number of claims are in many respects remarkable mineral bearing fissures. The ledges are singularly strong and the ore chutes have extraordinary length and as far developed depth. Thus far, there is not an ore chute failing to go down as far as explored; on the contrary, they give every evi-

dence of being permanent and productive. It was supposed until recently that this porphyry zone was only traversed by the above veins, but recent developments amply demonstrate that there are innumerable veins and spurs at various degrees crossing the main course of the belt; indeed, it has been in these cross veins that the most sensational and richest strikes have been made.

The ledges vary from two to thirty feet in width, are generally well defined and remarkably free from any base metal. The gold is finely disseminated through the quartz, but it is in the metallic state and fully 60 per cent is saved on the plates, the remainder being taken up by cyanide.

A test of ores from various mines in the Republic camp has been going on in Butte, Montana, under direction of R. B. Turner, the well-known cyanide expert. This test was made for Geo. H. Casey of the Butte Sampling Works, to ascertain whether the ore was amenable to the straight cyanide process, with a view of erecting a custom mill. The report of Mr. Turner will be published in these columns in a future issue.

CORRESPONDENCE

CALIFORNIA.

(From Our Special Correspondent.)

MOJAVE, CAL., April 10, 1899.

EDITOR JOURNAL:—Your favor of a short time ago was received in due time, also notices and marked copies of JOURNAL, calling the aid of all interested in mining matters to Miners' Convention, on April 29th. Having business engagements, it will be impossible for me to attend the Convention in person, but I am interested and think the aim a good one, if good representative mining men from each district will become interested, a miners' branch association can be formed, and, if properly conducted, be of great benefit to the mining interests of Southern California, not only in the way of legislation but something should be done to do away with many 10 per cent curbstone brokers, so that capital and mine owners could meet in a business way without the fear of being blackmailed. All of this could and should be arranged through the columns of the JOURNAL. Your city, as well as others, I am sorry to say is full of this class of people, and they should not be tolerated in any Association or Convention. Let them get a pick and shovel and work for a prospect.

I have placed your letter in the hands of some good reliable miners, and same will be acted upon. We have decided to send to Convention Mr. Thomas Duran and Mr. W. E. Soule, good, responsible and intelligent miners and mine owners. They will represent the Mojave district, which seems to have a bright future in store.

I expect to make a flying trip to your city in a week or so, may then have the pleasure of meeting you and renewing my subscription to the JOURNAL, which is a good one. Will give you a few items when we meet.

Yours very truly, W. R. JOHNSON.

(From Our Special Correspondent.)

DALE, Cal., April 6, 1899.

EDITOR JOURNAL:—The Dale camp is growing better every day, and the stage driver says if business in his line keeps increasing as it has for the past month, he will be compelled to put another stage on the line. All the business men say that business is double what it was a short time ago.

Dr. Bedford is hauling ore to Meachem's

mill this week from the Leota mine. The Leota is turning out some very fine ore, and they have out about 200 tons of \$150 ore.

Ellerman & St. German will begin hauling their mill up to mill the rich ore from their new strike this week. They are going to get water from Burt's well.

Frank Wellington and Mr. Pope of Los Angeles were in Dale this week. Mr. Wellington and Dr. Palmer of Los Angeles own some very fine prospects up at Gold Basin just south of the O. K. mine.

Warren & Sullivan, who lately made the new placer strike three miles east of Gold Basin, are taking out some very fine gold. These gentlemen, with one little dry washer and no extra help, take out two hundred dollars a week.

H. T. Gravely, an enterprising young Englishman, has a very fine quartz prospect about four miles south of Dale in the Humbug mountains. Mr. Gravely's ledge is about ten feet in width and assays from \$20 up to \$125, and he is now down 70 feet and pushing the work along. DALE MINER.

DAGGETT, CAL., April 10, 1899.

(From Our Special Correspondent.)

EDITOR JOURNAL:—Aside from the borax properties in this section, there is very little mining going on. A few leasers are still at work in the silver mines at Calico, and prospecting for gold and copper is going on in the desert.

C. Lillis, of San Francisco has commenced the erection of an experimental plant on the properties of Messrs. Meyers, Owens and Donovan for an interest in the mines. The principal property owned by them is the Columbia, which has a large body of low grade ore, probably 10 per cent borax. The vein averages from 100 to 300 feet in width.

Several thousand dollars' worth of development work on these mines completed, a 200-foot incline and about 300 feet of drifts, etc., all in ore.

Sheds for the galvanized iron-lined crystallizing vats are being erected, 32x185 feet. The whole plant is to cost \$20,000.

The ore is first crushed then roasted in a 5-ton roaster; it is then pulverized dry in a Tustin Pulverizer, and is then boiled in chemicals. The solution being run into settling vats, the impurities settle to the bottom, after which the vat is decanted, allowing the borate solution to run into the crystallizing vats.

Stanley & Bartlett, a few miles north of Daggett have a large body of a fair grade of boracic acid which they leach in an arrastra, cutting the ore with sulphuric acid and water. When thoroughly cut the sulphuric acid is set free and the mass allowed to settle and drain. The clear water with boracic acid is then run into sun vats to evaporate.

Until the 1st of April, the Pacific Coast Borax Co. had been producing about 150 tons per day, but the force was reduced on that day, so that only 50 tons is now being shipped. Their plant works to perfection and the ore body is holding up well. For just what reason the company reduced its production is not yet known.

D. D. Connell and Marcus Pluth have leased the Waterloo silver mine at Calico and 15-stamp mill at Daggett. The ore is shipped from the mine to the mill over the narrow-gauge railway connecting the two places. From 15 to 20 men are employed in the mine and mill. Messrs. Connell & Pluth are doing custom work as well. R.

MASSACHUSETTS.

(From Our Special Correspondent.)

Boston, April 6, 1899.

As we predicted in our last letter, the Boston stock market has shown great strength. Among the copper shares, Calumet & Hecla has risen steadily from \$705 to \$850. The other coppers have been firm but not very active. Parrot stock has fluctuated between \$41 and \$64. We believe Parrot will go much higher.

While copper stocks are attracting the attention of the Boston public, yet it is well not to overlook the fact that the iron and steel industries are in the most flourishing condition ever known in this country. Prices have risen greatly and will advance still further. Pig iron production, although enormous and the largest in our history, is nevertheless inadequate to supply the present demands. We should not be surprised to see iron stocks duplicate some of the remarkable records of copper stocks in the Boston market. Among the companies which are making large profits and will continue to do so while the statistical condition of the metal remains as strong as at present, are the American Steel and Wire, Federal Steel, Tennessee Coal and Iron and Colorado Fuel and Iron.

Among the gold stocks listed on the Boston Exchange, we believe Cochiti is the very best. This is a low-grade free-milling proposition managed by Mr. J. A. Coram, one of the most successful mining men in New England. It has been stated by the management that by the first of July the ore reserves will be greater than those of the Boston & Montana. The mine is equipped with the latest and best machinery, and we believe Cochiti will pay large dividends in the near future.

United Verde Extension is one of the first-class new copper properties recently brought out in Boston. This property is contiguous to W. A. Clark's bonanza copper mine, the United Verde.

ROBERT S. BICKFORD, Stock Broker.
No. 60 State street, Boston.

MEXICO.

(From our Special Correspondent.)

LA CALIFORNIA CAMP, MOCTEZUMA }
MINING DISTRICT, SONORA, MEX. }
Via Bisbee, Ariz., April 4, 1899. }

Our camp is attracting more attention daily. The last important improvement is the completion of the store house, which was just in time to store the 26 burro loads of mining supplies that arrived the next day in time to meet the demands of the many incoming prospectors and those already located in the camp. The Arizona Mining Company have just completed a thorough sampling of their immense ledge of fine milling gold ore, which is from 15 to 50 feet wide, finding an average assay of \$20 gold per ton, a wonderful showing for such a big ledge. In cross-cut No. 2 in the California, 125 feet below the surface, we have cut through twenty feet of \$20 gold ore and are still in good ore. In tunnel No. 2, fifty feet below the surface, all the face of the ledge averages \$60 per ton in gold. Places in the ledge show a great deal of free gold. Some of the new locations being made where the ledge is small run high in free gold and would pay well to ship. A 15-inch vein located in our camp assayed 1200 ounces silver and \$300 in gold. There are

many large ledges of free-milling ore in this camp that appear to be inexhaustible. Many of them have chutes of ore twenty to fifty feet wide. Another new location made recently in our camp has a ledge from three to ten feet wide and gave surface assays of from \$5 to \$20 in gold.

The San Miguel mining company has made a number of locations in our camp, each showing a large ledge of high grade ore, and will commence developing soon. Many veins are proving to be very rich in streaks, or where the ledge is small. Assays from a 15-inch vein gave \$9,300, \$10,000 and \$13,000 gold per ton. A mining engineer is now in camp looking over the field with a view of erecting an electrical plant at the rapids on the Yaqui river, five miles from our camp, where there is water power unlimited. With electric power generated and transmitted to our camp and mines, we could work \$5 ore at a profit. Experts and mining men are coming in, some representing English and others American capital, impresses one with the idea that this camp is soon to be the Cripple Creek of Mexico. C. W. MITCHELL.

WASHINGTON.

(From Our Special Correspondent.)

SPOKANE, WASH., April 3, 1899.

Rumors of consolidations continue, but there is more hesitation about concluding them, and capitalists are less willing to aid than they were a short time ago. There is a limit to the capacity of the public to absorb new "consolidated" stocks, and cautious capitalists fear this limit will soon be reached. The effect of overloading the market with securities may be serious and it is just as well to stop in time.

The completion of the sale of Republic mine to the new company, with \$3,500,000 capital, was devoid of sensations, particulars of which are to be found elsewhere. This stock is a good 10 per cent interest-bearing investment at \$1.70 per share. The ore values at the present time are equivalent to \$6,000,000, although many claim there is \$8,000,000 in sight. This stock, if not already, will be immediately listed on the Montreal and Toronto stock exchanges.

The Republic mine is paying profits once more. First dividend under new company. Payment will be \$30,000 on April 15. Total dividends paid to date, \$150,000.

Jim Blaine holds its advance and all offerings are quickly taken. Princess Maud is in better form, but still weak. This stock is a great purchase but seems sadly neglected. Insurgent has continued to do a lively business and is in great demand. Deer Trail No. 2 has been very active and closed strong at 23½ bid. Aspinwall continues in favor with considerable outside inquiry. Polar Star caused considerable excitement on account of the reported strike. San Poil fell a few points further and closed very weak, while Eureka Queen increased in strength. El Caliph was in demand. Work on the D. D. and Union has resumed and some good results are anticipated.

The sale of 190,000 shares of Quilp to a Vermont banker had a tendency to stiffen the price. Number Six is unchanged. Mountain Lion is now operating several drills and making good headway, but the stock persistently refuses to advance. Spokane Trust Co. was in big demand, resulting in many orders going unfilled. Many of the properties in

which this company is interested are showing up exceedingly well. This stock will make investors money. Pearl remains dull. Work upon the Surprise has commenced, which created some slight demand for the stock.

Butte & Boston is recovering very slowly, although splendid reports are received from the property. The expected has happened and Ben Hur fell $7\frac{1}{2}$ cents. The property from reports is good, but lacks management. Troubadour continues to improve. Black-tail shows a decline, losing its previous gain.

BRITISH-CANADIAN INVESTMENT AND
MINING SYNDICATE.

Miscellaneous Mining News.

ALASKA.

Relief for Miners.

Acting Secretary Meiklejohn stated April 6th at Washington that owing to the numerous stories of destitution and suffering in Alaska, which are being received at the department, orders have been issued to Captain Abercrombie, commanding the Copper river expedition, to hurry his departure as much as possible.

A telegram received the same day from that officer indicated that the expedition would leave Seattle on the 12th inst. They should reach Valdez on the 19th of the month. The hope is expressed at the war department that the promised action of the military authorities in expediting arrangements will serve to alleviate the distress at an early date.

Capt. Madison well known at Skaguay, and at one time in the employ of the Pacific Coast Co., has just returned from the Porcupine district and reports that it is fully as rich as has been stated. In company with Thomas Storm, Mr. Madison left Skaguay just before Christmas. They went up the Klobena river 32 miles to Mallard creek staked claims and got good prospects. The dirt on Mallard creek is common gravel. From the mouth of Mallard creek they went 8 miles up Klobena river to Porcupine creek. The pay dirt at the head of Porcupine creek washes more to the pan than has been found on any creek of the district. Glacier creek is only one mile from Porcupine and the formation on both creeks is very similar. At some of the places on the creeks the gravel is only six inches deep and a large amount of fine gold is taken from this gravel. When bedrock was reached the gold was found deposited in natural riffles and in several instances pockets were found that produced some splendid nuggets. Two miles below the head of Porcupine, Storm discovered a new creek, which was named Twichell, in honor of Frank A. Twichell of Skaguay. The creek was prospected thoroughly and good results were obtained.

Many people are on the trails leading into the Atlin district, and everything will soon be humming in the new camp. Matters in the mining recorder's office are very complicated, however, and much dissatisfaction prevails. As a placer mining district it is believed the district will prove a great success.

ARIZONA.

The past two months has witnessed many changes about the works of the United Globe mines, all in the direction of improvement and an increased output of copper, says the

Globe *Silver Bell*. Two furnaces are now in blast, the dimensions of which are: one 38x96, and of the other 42x120. The blast is furnished by two No. 7 Connorsville blowers, one of which, with the engine to run it, was installed about two weeks ago. The big furnaces eat up the ore very fast, to supply which keeps the large mine force busy, as well as the Bleichert wire rope tramway to deliver it.

At the mines work is being prosecuted with vigor. A large hoister for the Hoosier shaft and a Worthington triple expansion pump, with two Sterling water tube boilers, each 100 h. p., are among the additions to the plant to be made at an early day.

A very rich strike was recently made in the Tip Top mine, in the Hassayampa district, in Yavapai county. The ledge is one foot wide and the ore assays from \$300 to \$750 per ton gold, and twenty-six ounces silver. The mine is owned by Prescott people and has been worked for years.

CALIFORNIA.

AMADOR COUNTY.

Milling the Empire Dump.

S. K. Thornton, who, in company with several others, have a contract with the owners to work the old Empire dump, has, after several months of experimenting, finally hit upon a successful plan of saving a very large percentage of the gold therein. He first started in with one Huntington $5\frac{1}{2}$ foot mill, and used quicksilver and plates, now he is using three Huntington mills, without quicksilver and plates, running the pulp from the mills on to Willfey concentrators. The three mills are grinding up about 100 tons of material per day, the two concentrators taking it all and saving all of the values excepting a very small percentage, even saving what free gold there is in the mass. The amount saved is about two per cent of the mass, which is shipped away for reduction. The mills run night and day.—*Amador Ledger*.

EL DORADO COUNTY.

The latest clean-up at the Rose Hill quartz mine, near El Dorado, proved very satisfactory. Lewis Emery, owner of the property, has ordered new steam machinery for use in the mill. The heavy rains have assured a bountiful supply of water for other power. The management has spent something over \$60,000 in repairing a large reservoir and in constructing an extensive ditch in order to bring water to the mine. This work was completed last January. The water from this ditch will not only be used for power, but also for sluicing and hydraulicking, as Emery & Co. own quite a large tract of placer land in connection with the Rose Hill property, upon which they will commence operations in the near future.

KERN COUNTY.

The Toll Gate Canon mines are booming and the late rains will give them all the water they need to work with, says the *Tehachapi Times*. The Tate & Buck mill is running day and night on good ore, of which they have a large amount in sight in the mine and on the dump. One who, years ago, traveled the rough trail of the old stage road, could hardly believe he was on the right trail when he heard the tap-tap of the two-stamp mill and soon after came in sight of the lively little camp at Toll Gate.

Val Schmidt, who purchased a third interest in the g-spot mine from B. F. Myers, has recently purchased another third from Atkinson and now owns it all. A shaft has been sunk 30 feet and some exceptionally rich ore has been taken out, and when it is milled will prove a surprise. They now have 45 sacks of ore and will have a milling some time soon. This little mine was only discovered and located in January of this year.—*Randsburg Miner*.

LOS ANGELES COUNTY.

Above Kinneyloa J. F. Mayne of Pasadena has uncovered a large ledge of gold bearing quartz in what is known as Mayne's Canyon. The average assay value of the ore is \$12 to the ton in free gold. The ledge, it is reported, can be traced up the side of the mountain for three miles, and in places is 175 feet wide. Z. Decker, who is one of the owners, has taken up ten claims, and has established a camp in the canyon, which is within half a day's ride from Pasadena. The claims will be thoroughly developed as soon as possible.

RIVERSIDE COUNTY.

The Good Hope mine at Perris, which has fallen into disrepute on account of having figured in a swindling deal, is reported to be turning out over \$2000 each month over its running expenses.

Several parties have been out investigating the Santa Rosa mine near Perris, and it is expected that pumping will commence next week, with a view to the resumption of work on this mine. As it has always been one of the best paying mines in the Pinacate district, it will be a good thing for Perris when it resumes operation.

SAN BERNARDINO COUNTY.

W. M. Bartee, of Riverside, is about to start a stage line from Manvel, on the California Eastern Railroad to Searchlight, Nevada, the new mining camp.

Manvel is 35 miles from Blake on the Santa Fe, and 25 miles from the mining camp. It is Mr. Bartee's intention to run a stage each way every day between Manvel and the camp, and this service will be increased as the demand for it arises.

Searchlight, the new mining camp, is growing fast, and the rich prospects that have been uncovered there recently are sure to make of the camp a very important one before the summer is over.

J. S. Huston and Fred Carter of Johannesburg, and W. W. Tinker of Randsburg own several claims about forty miles east of Johannesburg, upon which they have found copper signs. They have staked these claims and have a man working the assessments.

At Tecopah, near Resting springs, some Los Angeles parties are preparing to remodel and start the old smelter. This is a lead camp, with a percentage of silver and some valuable mines are found there. There are two big ledges, with several claims on each.

The copper smelter, recently erected by Messrs. Lang & Robinson at Ivanpabe, is working to perfection. A car load of copper matte, valued at from \$8,000 to \$10,000, was recently shipped. The ore is being taken from the Copper World mine.

SAN DIEGO COUNTY.

A five-stamp mill is being built at the old Escondido mines, near Escondido, San Diego

county, Cal., replacing the Griffin rotary mill formerly there. The Escondido mine has been worked off and on for many years.

The Oak Grove Mines.

The news being received from the Oak Grove mining district, this county, of late is flattering. It is there that the Mountain Beauty mining company owns its mines and steady development work is being pushed with a considerable force of men. This company owns three mines — the Mountain Beauty, the Annex and the Jessie L. The company is devoting about all its energy to work on the first named mine. Two tunnels, one 125 feet and the other 150 feet, have been run and a shaft of some depth has been sunk in the lower tunnel. The ledge in the Mountain Beauty shows up about five to eight feet in thickness. Reports say that the ore goes \$15 to the ton on an average, which is good for a ledge of the size named. It is the intention of the company to erect a 20-stamp mill and cyanide plant just as soon as the mine is in shape to keep the machinery running.—*Hemel News*.

TUOLUMNE COUNTY.

Reports say the sale of the famous Rawhide and App gold mines in Tuolumne county, owned and operated for years by Nevius, Martin and Ballard, will be consummated within sixty days. Neither the purchase price nor the names of the buyers are given, but it is known that \$2,000,000 was refused for the same property a few years ago.

COLORADO.

San Juan Mines.

Of the mills in San Juan county, Silver Lake is the largest. Its daily capacity being about 200 tons. The concentrates are brought down over a 14,000-foot tramway to the railroad. What the future plans of Mr. and Mrs. Stoiber are one can only judge by the past, and should the increase be kept up from year to year, the largest reduction plant in the state will soon find a place under the direction of the present management.

Next comes the Iowa on the list of San Juan's big mills, capable of handling 100 tons per day, and the present output of the Iowa group of mines taxes the present plant to its full capacity.

The Gold King mill, up Cement Creek, is growing by jumps. From a starter with ten stamps about two years ago, there are now forty stamps and the end is not yet. From seventy-five to 100 tons per day are reduced to concentrates.

Besides these are the Sunnyside, Howardsville, Sunnyside extension mill, Silver Wing, North Star, Little Dora, Titusville, Silver Briggs, Crook, Little Giant and a number of smaller mills scattered over the county. Among the projected mills for the coming season are the Tiger, Occidental, Lackawana, Veta Madre, Red and Bonita, Yukon Tunnel and the Gold Bug-Repeal.

Cripple Creek Items.

Last week's shipments from the Raven were as follows: From the Gregory, 104 tons, and from the Raven, 30 tons, the ore running about as usual.

Murphy & Co., leasing on the Red Umbrella, sent out their first shipment last week.

It consisted of ten tons of screenings that assays at the rate of \$50 per ton.

Griffin & Herbert, leasing on the east end of the Lucky Guess, sent out a 25-ton shipment of \$30 ore. The last shipment of high-grade averaged \$133 per ton. The ore comes from a drift run at a depth of 110 feet.

The latest important strike reported from the Cripple Creek district is credited to the Dante mine, located on Bull hill. It was made by lessees Rieger in a drift from the fourth level from the main shaft. This brings it to a point 250 feet below the surface, so that good stoping ground is represented.

Sub-lessees working on the south end of the Jenny Sample, belonging to the Gould company, on Raven hill, have a very good showing on their block of ground. In sinking 15 feet they have saved 10 tons, which was sent out last week. In the bottom of their shallow shaft there is about three feet of ore that assays \$30 per ton without sorting.

Fred H. Nye, state mining inspector was in Creede, investigating the methods used in tapping the water by the Nelson tunnel from the Amethyst, Chance, New York and several other mines along the route.

The work on the tunnel has about reached the danger point, and Inspector Nye was instructed to make certain that everything is in good order, to avoid any chance of an accident when the water is reached. He says that unless a natural flow is struck, he does not anticipate any trouble by the draining.

This tunnel will drain the mines to the depth of 1,300 feet, and thus make way for the employment of hundreds of miners now out of work.

IDAHO.

The Empire-Idaho Mining and Development Company is arranging to run a long tunnel into its ground, says the *Wallace Press*. This tunnel will start from Government gulch, and while considerably shorter than the tunnel being run by the Bunker Hill and Sullivan Company, will open up the ore bodies of the Last Chance and its neighboring properties at a depth which will give ore to work on for years to come before a hoist will become necessary.

W. H. Witham, treasurer of the Blue Grouse Mining Company, made the second payment of \$9,000 on the bond by which that company holds some claims on Sunset, near Wallace. This is the second payment, \$2,000 having been paid down when the bond was taken, and leaves but one more of \$9,000 due a year hence. Work will be resumed as soon as the snow is in a shape that supplies can be got in there without unnecessary expense. The tunnel which was run last year is 200 feet long; ore was struck 30 feet from the surface and continued through to the face. So far, however, it has but little depth.

The Hunter, at Mullen, has 12 men working in the winze, four on the air compressor and four carpenters. The shaft is down about 10 feet, and some high grade ore was struck when but five feet down.

MICHIGAN.

The Moro to Resume.

The Moro shaft of the Cleveland-Cliffs Company is to be pumped out, and after that is done active mining will be resumed. The

Moro is in the corporate limits of the city of Ishpeming, is located immediately southwest of the old hard ore mines, and produces ore of the hard ore variety, a non-bessemer. The shaft is 708 feet deep.

The Mesnard

The Quincy Mining Co. has contracted with the Rand Drill Co. through its representative, Fred C. Osgood, for a new compressor, with a capacity of from 10 to 15 drills, also, a number of drills for use at the Mesnard. The work of unwatering this shaft will be begun early this spring and the old mine will be thoroughly explored.

It is not improbable that at some future day the Old Colony and Mayflower mining properties will be consolidated, says the *Hancock Copper Journal*. The Mayflower adjoins the Old Colony on the north and comprises 840 acres; Old Colony has 1,200 acres, and has an excellent showing of copper in both its No. 1 and No. 2 shafts.

MINNESOTA.

John B. Arnold of Milwaukee, is in Duluth and it is reported he has closed a deal whereby 2,000 acres of Douglas county copper property will be taken up by the St. Croix Copper Mining Company. The capital to be furnished by Chicago and Milwaukee capitalists. The land is located principally in the southern part of the county.

Work on the Fond du Lac mine is progressing, as is also the work on Shaft No. 5 of the North Wisconsin property. It is expected that this mine will be the first to put in machinery.—*Duluth News-Tribune*.

MISSOURI.

The Snapp-Warren lease at Tuckahoe has been rechristened and will hereafter be known as the Morgan-Johnson.

Hart & Pabst are down 115 feet with their shaft on the Wright lease, near the Old Hickory. They are sinking to a big run of ore that was developed with a drill.

The old Neosho mines, five miles north of Neosho, have been leased by a Philadelphia company, including 1500 acres of land. The company will spend \$5,000 prospecting this summer.

The Beckwith Hall and Get There leases at Carterville both have a true "blanket" or "sheet" formation, which is rare in this district, and mines located thereon have a face only limited by the surface area apparently. The Opal, on first-mentioned lease, has probably 400 feet of working face.—*Jeplin Herald*.

MONTANA.

At Carbonado the shaft is down 890 feet and drifting in three directions is now being done. It is thought that in about three weeks the shipment of coal will commence. The Carbonado mines expect to ship as much more, and the coal traffic alone to Butte by way of Whitehall will be immense. It is presumed that there will be a force of 500 men at work in Carbonado within a very few weeks. The other camps will also employ a large number of men.—*Helena Independent*.

NEVADA.

The population of Golconda has recently been increased by Tuscarora miners who have been thrown out of employment by the suspension of work in the Dexter mine.

High Head Pelton Wheels.

The Pelton Water Wheel Company have recently installed two wheels in the Ophir mine on the Comstock, under such extraordinary conditions as to head, as to be worthy of note. One of these is a 32" wheel direct connected to a dynamo used for lighting the mine, and the other a 36" wheel, direct connected to a blower, for the purpose of ventilating the various shafts, drifts and stopes. Both of these wheels are located at the Sutro Tunnel level, and run under a vertical head of 2020 feet. This is believed to be the highest head under which any water wheels have ever been operated, except a similar wheel furnished an adjacent mine some years ago, which runs under a 2100 ft. head.

Upwards of thirty Pelton wheels are running the various Comstock mines, under heads varying from 1200 to 2100 feet—operating dynamos, blowers, hoists, etc., etc., many of which have been running several years with practically no expenses in the way of repairs.

From these references it will be seen that there is practically no limit to the pressure under which these wheels can be safely and efficiently operated.

NEW MEXICO.

Output of Hillsboro Mines.

Output of Hillsboro gold mines for the week ending Thursday, Mar. 30, 1899, as reported for the *Advocate*:

	TONS
Wicks.....	20
K. K.	15
Richmond.....	35
Snake Group.....	65
Opportunity.....	20
Sherman.....	5
Cincinnati.....	10
Tripper.....	55
Rex (silver-lead).....	5
Eureka.....	10
Freiburg.....	10
American.....	15
Warren.....	20

Total..... 285

Total output since January 1, 1899—3,565.

OREGON.

Keystone Mine Sold.

Another important mining deal was closed in this city a few days ago, by which the Keystone and Belle mining claims, owned by H. P. Watson, were conveyed to Messrs. McComas & Dunphey, of La Grande.

The Keystone is the east extension of the Bonanza, and the Belle adjoins the Keystone. There is a 200 foot tunnel on the Keystone which will be extended at once. The price paid was a good round figure, and the property will be placed on the list of produces as fast as good management will permit.—*Baker City Democrat*.

SOUTH DAKOTA.

Bear Gulch.

From Mr. Andrew Johnson, who is connected with the Deadwood and Bear Gulch Mining Company, it is ascertained that they are now sinking a shaft which is about 50 feet deep and have encountered porphyry on one side. Mr. Johnson is now obtaining a pump and boiler and hopes to be able, with these appliances, when in place, to keep the shaft clear of water. Ore has been struck which assays as high as \$15, and richer ore it is expected will be found at a not greater depth than 100 feet from the surface.—*Black Hills Mining Review*.

The D. & D. Company has recently bonded considerable property south of the Delaware shaft in Ruby Basin.

The Ragged Top Company has leased a portion of its ground to William Pringle and James Desmond, who are taking out some ore.

UTAH.

Among the Mercur properties Chloride Point operations are flourishing, though no news of importance is received from the mines. Some very fine shipments of cyanide productions are being shipped from the Daisy mine, and the official reports are very flattering. The grade of ore in the Geyser-Marion properties is reported lower than usual. The Mercur Co.'s improvements are looking exceptionally fine, but the stock is about the same as last week.

The Yellow Jacket Mining Co. reports an 18-inch vein of \$10 gold quartz, of the same character as the Eureka Hill ore, of which mine Pat Shea was foreman for several years. This group lies north of the Beck and west of Dennis Harrington's property.

G. S. Hays, lessee of the old workings of the Tesora, is taking out high-grade ore. The mineral is what is termed "liver" ore, and some of it runs as high as 470 ounces silver and 10 per cent copper to the ton.—*Juab County Republican*.

WASHINGTON.

Republic Mine to be Developed on a Large Scale.

"We shall begin next week to sink a shaft 1,000 feet deep on the Republic mine," said Patrick Clark after the meeting of the stockholders had been held and the transfer of the Republic mine and all assets of the old company had been made to the new corporation. "This shaft," he continued, "will be a double compartment and will be started about in the center of the pay chute. It will be sunk vertically, however, without regard to the ore body."

"We shall also at once begin the work of enlarging the daily capacity of the mill from 35 to 100 tons. In short, the new company will undertake mining of the Republic on a large scale."

The meeting of the stockholders was held April 2nd. There was not the slightest lack of harmony. Indeed, the change in the capitalization of the Republic and its transfer to the new company have met with the unanimous approval of all the stockholders and no word of dissent has been heard. The interests

of almost all the stockholders, large and small, were placed confidently in the hands of Patrick Clark, with a full understanding of what he proposed to do, and the outcome has been satisfactory to everybody.

Polar Star.

The reported strike on the Polar Star has been confirmed by one of the owners of the property. He states that while some exceedingly high assays have been obtained, the ore as a whole is not so rich as has been reported. He further says that the ledge is as wide as has been stated—20 feet.

The North Pole is proving all, if not more, than the English syndicate, headed by Alexander Baring, anticipated when this valuable property fell into their hands. The splendid results obtained are due to no limited extent to the untiring efforts of Mr. Emil Melzer, the able superintendent.

FOREIGN MINING NEWS

BRITISH COLUMBIA.

Ore Shipments.

The shipments of ore over the Kaslo & Slocan railway for the week ending March 25rd, as reported by the *Kootenaiian*, were as follows:

Mine.	Destination.	Pounds.
Payne	Omaha	413,000
Last Chance.....	San Francisco.....	160,000
Last Chance.....	Aurora.....	100,000
Rambler.....	Aurora.....	80,000
Jackson.....	K. O. Co.....	70,000
Reco.....	Aurora.....	40,000
Liberty Hill.....	K. O. Co.....	30,000

Total.....913,000 pounds or 456½ tons.

Fraser River Mining.

The dredging plant at Big Bar is again at work in charge of W. F. Gore, with good prospects for a successful season. It is reported that another plant will be placed on the river in that vicinity lower down this season. At Crow's Bar four Chinamen are ground sluicing and with only a small head of water are averaging between two and three dollars a day to the man above expenses. Good prospects have been found all along the river and no doubt Crows Bar will soon have a dredging plant as the indications are that it will pay well. On the river benches the showing is also good and offer inducements for hydraulic, a scarcity of water only preventing. If this could be overcome by means of raising water from the river to the benches about 300 feet good results would certainly follow.—*Lillooet Prospector*.

MEXICO.

La Bufa mine, near La Dura, continues to improve in appearance and value. Last week a pack train took 100 cargoes—thirteen tons—of rich ore into Prietas for shipment. The value of the lot was more than \$4,000. The property adjoining La Bufa—the Apache owned by the same parties, is also improving finely with development, and promises to prove more valuable when the same amount of work is done.

George Watson, at Chibubua, is at present at Inde, State of Durango, where he is erecting a smelting plant for the reduction of lead and silver ores. He is also installing a compelling furnace, and we learn that he has sur-

veyed and constructed a new wagon road five miles long, and is expecting to install a wire-rope tramway for the carrying of ores from a mine to the smelter; the difference in altitude is 650 feet. The company backing him in these enterprises will install a steam hoisting plant, to take the place of their present horse whim. The company show commendable enterprise, in erecting a smelter so far away from a railroad, and deserves success.

One of the most promising mining districts in the State of Chihuahua is situated 125 miles southwest of the city of Chihuahua and near San Jose de Gracia. The mines are scattered over a section of country about 15 miles square.

Within the past few weeks there has been a new discovery in this district of a very rich copper mine by some railroad contractors about 12 miles west of Santa Isabel on the line of the Chihuahua & Pacific railroad.

This discovery was made in a new mineral district and it is very likely there will be numerous other discoveries, as this country has never been prospected. The lucky owners of the discovery last mentioned have a copper vein over eight feet in width which shows by assay to contain 30 per cent copper, carrying traces of gold and silver.—*Chihuahua Enterprise*.

Latest Mining Decisions.

Prepared by Andrews & Murdoch, Berrien Springs, Mich.

Although it is true, as a general rule, that only citizens of the United States can locate mining claims, the question of citizenship can only be raised by the government; and in an action of ejectment in a contest between individuals the question cannot arise. *Wilson et al. vs. Triumph Consol. Min. Co.*, 56 Pac. Rep. (Utah.) 300.

A located lode claim is an interest in real property which, as against all but the United States, is treated as a fee, and will support an action to quiet title under Civ. Code, Sec. 255, authorizing a person in possession of real property to bring an action to determine adverse claims thereto. *Mt. Rosa Mining, Milling & Land Co. vs. Palmer*, 56 Pac. Rep. (Colo.) 176.

A placer location confers neither title to or possession of, nor withdraws from subsequent location by others, known lodes or veins of mineral in place within its limits, under Rev. St. U. S., sec. 2333, providing that a placer patent which fails to include an application for a vein or lode claim known to exist within its limits shall be deemed a conclusive declaration that the placer claimant has no right thereto. *Mt. Rosa Mining, Milling & Land Co. vs. Palmer*, 56 Pac. Rep. (Colo.) 176.

A qualified locator may relocate a mining claim in the possession of an alien who has not declared his intention to become a citizen, if relocation be made without force or violence, and prior to declaration of intention or conveyance to a citizen. As against an intruder, possession is prima facie evidence of right to possession, but as against one connecting himself with the government title, mere occupancy must yield to the higher right. *Wilson et al. vs. Triumph Consol. Min. Co.*, 56 Pac. Rep. (Utah.) 300.

The assignee of a mining lease was to work the claim, and to pay therefor the net proceeds up to a certain sum, failed to realize profits, and permitted another to work the

mine with the same understanding, but he also failed to realize profits. The assignment did not forbid subletting, nor require continuous working. *Held*, that assignee's letting another work the mine was not a putting it out of his power to comply with his contract, so as to make him liable as if he had carried it out. *Caley vs. Portland et al.*, 56 Pac. Rep. (Colo.) 350.

Rev. St. U. S. Sec. 2330, limits a lode claim of mineral bearing quartz in place to 300 feet on each side of the center of the vein and 1,500 feet in length. Section 2333 fixes the area of a vein or lode claim, within the limits of a placer patented by the same person, 25 feet of the surface on each side of the vein or lode. *Held* that a lode claim within the limits of a placer location, patented by a person other than the owner of the placer location is limited to 25 feet of the surface on each side of the middle of the vein. *Mt. Rosa Mining, Milling and Land Co. vs. Palmer*, 56 Pac. Rep. (Colo.) 176.

Where a mining claim is located by an alien on unappropriated government land, and all the acts necessary to a valid location are performed by him, and he and his representatives, claiming to be the owners thereof, perform the work necessary to keep the claim good until it is conveyed to a citizen, and no rights of third parties have attached prior to the conveyance, as between private citizens, in which the government is not interested, the conveyance vests the title in the citizen, although the original locator was an alien. *Wilson et al. vs. Triumph Consol. Min. Co.* 56 Pac. Rep. (Utah.) 300.

A contract between the owner of lands and a company operating in oil and gas, whereby such minerals are granted in place to the operating company upon the stipulation that, if gas only is found, it will pay a fixed sum per year for each well "while the same is being used off the premises," and containing no stipulation inconsistent therewith, should not be so construed as to require it to pay such sum for a gas well whose product is not used, even though the jury should be of the opinion that it might have been so used off the premises without financial loss to the company. *Ohio Oil Co. vs. Lane*, 52 N. E. Rep. (O.) 791.

In an action to recover one year's rental under a coal mining lease, which contained an agreement by the lessees to operate the mine continuously, to pay as royalty a fixed price per bushel for all "lump" and "mine-run" coal taken from the mine, and that the annual output of the mine should be 500 cars, of 500 bushels each, of royalty coal, the defendants, who had mined only a small part of the amount so undertaken to be mined, offered no evidence in mitigation of damages, laid by the plaintiff at the total royalty which would have been due on the minimum amount agreed to be mined. *Held* that the lease furnished the agreed measure of plaintiff's right of recovery for one year's use and control of the mine by the defendant. *Swan vs. Brown et al.*, 56 Pac. Rep. (Id.) 141.

Plaintiff, a coal miner, in an action against the owner of the mine in which he worked to recover for injuries alleged to have resulted from an explosion of gas following his striking a match to light a fuse, testified that he tested the locality 15 minutes before, and it was clear of gas, and also that the presence of gas in sufficient quantity to cause the explosion would have been indicated by the flame of his lamp. *Held*, that a verdict for

defendant would not be disturbed, as the facts stated did not indicate that it negligently permitted the accumulation of standing gas, as alleged, but were only consistent with the theory that the gas suddenly escaped from some part of the surrounding wall, and that the negligence, if any, was on the part of plaintiff in not observing his lamp immediately before striking the match. *Sommers vs. Carbon Hill Coal Co.*, 91 Fed. Rep. (W. D. Wash.) 337.

Canada's Mineral Output.

The report of the Canadian Geological survey for 1898 shows a large increase (32 per cent) in the production of minerals. The total output was \$37,757,197, of which \$13,700,000 was gold, \$2,159,556 copper, \$2,583,298 silver, \$1,206,399 lead, \$1,820,838 nickel. The balance is made up of other minerals. The increase during the last thirteen years has been 270 per cent. The production of coal for the year increased 50 per cent. These coupled with the increase in the gold output, due to the opening up of the Yukon district make good the falling off in Quebec and the Northwest Territories.

The MINING AND METALLURGICAL JOURNAL of Los Angeles calls the attention of the miners to a big convention of the miners to be held in Los Angeles on the 29th of April. The JOURNAL is the best mining paper on the coast, and as it is working for the convention, the miners can be assured of a splendid meeting.—*Tehachapi Times*.

Anthracite Mining Methods and Conditions in the Scranton District, Pa.

In his annual report for 1897, Mr. H. O. Prytherch, mine inspector for the Second Anthracite District, treats in a very able manner of the methods and conditions of mining in the vicinity of Scranton, as follows:

"When a property underlain with several seams of coal is about to be developed, there are two very important considerations which determine the order in which the seams will be mined, namely, the demand of the market and the economic mining of the seams as a whole. In former years the market seems to have demanded the first attention; in later years, however, the question of mining is forcing itself prominently to the front. Owing perhaps to this fact, we find that the order in which the coal seams of this district have been worked, does not tend to make the mining of the whole the least expensive. Looking at the subject from the mining engineer's stand point, one is forced to admit that on this account the mining of the remaining seams has also been rendered more difficult and less safe. In the early days of mining the facilities for cleaning and preparing coal for market were of necessity of a primitive kind. Competition, however, was active. Owing, therefore, to these and other facts, when a coal property was about to be developed, the sections of the several boreholes were brought forward and the quality of the several coal seams compared, and the vein which would satisfy the demand of the market, at the time, irrespective of its position, was selected, and in most cases was opened and mined. Little or no importance being at that time attached to the subject of mining the remaining beds.

"In other countries where coal is being mined at depths varying from 1,200 to 2,000 feet, and where the longwall system of min-

ing is in vogue, the order in which the beds are mined is not of so great moment, for with that system, no attempt is made to support the superincumbent strata, but on the contrary it is necessary that it should follow the working face and thus facilitate the cutting of the coal, and then rest on cogs and pack walls. This movement of the overlying strata does not produce fractures except where the roof is very brittle. The cavities left by the working of a seam, under the conditions and by the system of mining named, are quickly filled, as the floor and roof of such mines soon meet, leaving no receptacle for dangerous gases, while caving and squeezing in after years are unknown.

"Where the pillar-and-board system of mining is in vogue, we are confronted with different results. After the selection of the seam to be worked is made in the manner already described, it is generally found that the largest and cleanest is first worked. This bed is often (as in the second anthracite district) overlaid and underlaid by other workable beds.

"When the first seam becomes exhausted, the superincumbent strata are supported principally by pillars of coal, and also by timbers. Another vein is then developed and mined in a similar manner. We will assume that the second vein worked is above the first one and then trace the result as the years roll by.

"While the work of mining is busily carried on in the second vein, time is doing effective work on the supporting pillars and timbers of the lower vein. The pillars are deteriorating and wearing away and the timbers are decaying. Part of the cavities are filled with fire-damp or other dangerous gases and other parts are filled with water. Blasting in the upper vein also has its effect on these supports. The weekly examinations of the old workings plainly show that a collapse must some day follow. As has already been noticed, the settling of the overlying strata on the cogs and pack walls in the longwall is gradual and few fractures are made; on the contrary, in pillar-and-board workings, the supports gradually weaken and suddenly the collapse takes place. Any accumulation of gas is driven with hurricane force, possibly causing a disastrous explosion. Safety lamps under these conditions offer but slim security.

"The effects of such a settling of the roof in the lower vein, particularly when it is a thick one, are seriously felt in the workings of the vein above, as the same pillars support both. Mining has to be suspended and work more dangerous to the workmen, and less remunerative to the operators, viz., coggings, etc., to limit the extent of the squeeze, has to be vigorously executed, resulting invariably in a shattered condition of the colliery. After this work has been accomplished, mining in the upper vein is resumed, and usually it is found that the work has been rendered more expensive to the operators and less safe to those employed. When the lower vein had caved under the unworked portion of the upper one, it has been found that instead of following its usual pitch or dip, the vein has assumed an irregular one, owing to the floor having settled on pillars as well as where no pillars existed. Drainage and haulage are therefore more difficult and expensive. As to safety, it has been noticed that the effects of the collapse are found in the shape of fractures in floor and roof which in many cases are difficult to secure.

"When the second vein worked is below the first, the effects are practically the same with the additional damage from water.

"In a general way, these are the condi-

tions under which coal is being mined in this district.

"In some instances the Diamond, Rock, Fourteen, and Clark veins have been worked out, and the surface veins above and some of the Dunmore veins below are being mined today. In other instances the three first named have been exhausted and the New County and Clark veins are being mined. In this way the combinations change at different collieries.

"*Precautions.*—When the old workings, as well as those in course of extension, are the property of one company, the former are well and carefully watched by experienced men, and the employees in the latter are duly warned and withdrawn when any danger is approaching. One of the larger companies in the district is, in three or four instances, flushing culm into the old workings, thus supporting and protecting the coal pillars.

"There are some instances in this district where the old workings of exhausted veins and the workings in course of extension in other veins under the same property are not owned by the same company. In such cases the parties now operating have no access to the worked out portions, and therefore no examinations can be made.

"*Thin Veins.*—It should be stated that the surface and 'Dunmore' veins are thin, and the latter gives off considerable firedamp. It is not generally known by persons outside of the mining fraternity that the mining of these thin veins is accompanied by risks peculiar to themselves. The surface veins have but a thin covering and this in most cases is soft, requiring careful timbering—more so than thicker veins at some greater depths.

"The Dunmore veins being from 2 feet 6 inches to 3 feet 6 inches thick, require considerable blasting of rock for height, necessitating the use of high explosives which were almost unknown in the larger veins.

"Less room is also provided in these veins, so that the risk of accidents from moving cars is greater. It is also more than probable that accidents from explosions of gas will also increase when a large number of mines are working these veins exclusively.

"It will be realized from the foregoing that the conditions which surround the underground worker are constantly changing and growing more dangerous as one bed becomes exhausted and another is developed.

"During the last few years a number of the most experienced miners have been replaced by men less qualified.

"If the conditions remain comparatively stationary, it is more than probable that a more favorable comparison with old time mining statistics would be shown, as the result of the enactment of better mining laws and their enforcement.

"*Barrier Pillars.*—Before the enactment of the mine law of 1891 little attention was paid to barrier pillars, and as a consequence there are but few mines in the district which are enclosed by a substantial pillar capable of withstanding the pressure caused by a large body of water. In fact the greater number of such barrier pillars as were left had been pierced. Should a fire take place in one of these collieries, such as would necessitate the flooding of the mine, it would under the circumstances be difficult to accomplish without affecting a number of the neighboring mines.

"It must also be admitted that there is another view which is more encouraging, namely in cases where the workmen are cut off from the shafts by a fire or cave, these connections would offer a way of escape. The fact that

the mine law now in force provides for substantial pillars to be left conjointly by the adjoining companies, cannot possibly be expected to supply the deficiency.

"*Bodies of Water in Old Workings.*—It should also be noticed that bodies of water had accumulated in parts of abandoned mines before duplicate surveys of the same were required by law, and as a result, we have to contend with bodies of water, the exact location and position of which are not correctly known. In some cases these rest against boundary lines."

PERSONAL NEWS ITEMS

W. T. CORNWALL, the representative of the Denver Fire Clay Co. of Denver, Colo., has recently returned to Denver from Mexico.

WM. H. EDGAR, president of the Dearborn Drug & Chemical Co., is in California. After visiting a number of the principal places of interest here he will go to Honolulu, Japan and the Philippine Islands to further his business.

M. J. BARASCH, M. E., of Revelstoke, B. C., is in Spokane, Wash. He reports a rich strike in coarse placer gold on the Tete Jaune Lache in the Cariboo District, B. C.

JOHN TAYLOR & Co., the assayers' supply house of 83 1st street, San Francisco, Cal., have published and issued a leather-bound guide, *Practical Notes on Hydraulic Mining*, by GEO. H. EVANS, M. E., general manager Consolidated Gold Mines of California, (Ltd.), Oroville, Cal. The book is an all round handsomely gotten up treatise on practical hydraulicking, of use to the hydraulic engineer as well as the hydraulic miner. The finest quality of linen bond paper is used in producing this work. The index to contents is the most elaborate ever shown in American works. Price, \$1.00.

M. B. SILVER, of San Francisco, Cal., has returned to that city from Sonora, Mexico.

GEO. MITCHELL has resigned the position of metallurgist for the United Verde Co. at Bisbee, Arizona. He goes to Sonora, Mexico, where he is to erect a 200-ton smelter.

H. L. LILIENTHAL, president of the Gold Ledge Co., returned to Spokane, Wash., from Republic a few days ago. He says that, contrary to many reports, the high values were not obtained on the surface, but near the bottom of the shaft.

A. R. WILFLEY, the inventor of the Wilfley concentrator, is in Virginia City, Nevada, visiting the Comstock mines.

T. GORDON JANNEY, of Philadelphia, Pa., has succeeded T. F. VAN WAGENEN in the superintendency of the Basic Company's gold dredging plant near Centreville, Idaho.

COL. E. S. TOPPING, of Trail, B. C., has lately purchased the British Chief group near Erie. He has put a force of men to work developing the property, and will incorporate a company to prosecute operations.

W. J. MILLER, the former manager of the Denver Engineering Works Co., has recently returned from the east to Denver, Colorado.

CHAS. T. AIKINS has been appointed manager of the cyanide mill, which has recently been completed by the Rose Gold Mining and Milling Co., near Victor, Cal.

JEROME DRUMHELLER, one of the officers and a large shareholder in the Evening Star mine, is in Rossland, B. C., looking after a large shipment of ore.

The contract for furnishing pipe, etc., for the MOUNT WHITNEY COMPANY's plant, at Visalia, Cal., has been awarded to the LACY MANUFACTURING CO., Room 2 Baker Block Los Angeles, Cal., of which R. H. LACY is president.

R. J. FRAZIER and Sons left Spokane, Wash., for Republic to commence work on the Big Four Mining Company's property.

DR. WOODCREEP, President of the Tuscarora Chief Mining Co., at Tuscarora, Nev., is in San Francisco, Cal., where he is buying mining machinery and a cyanide plant.

URIMSTONE.

The arrivals at this port—3,200 tons—this week have flooded the market, and spot best unmined seconds are quoted at \$22.50-\$23, and shipments at 50c. per ton less. Best thirds are \$20.00-\$21 per

NITRATE OF SODA.

The demand is still quiet. An arrival of 17,880 bags is noted. There were sales at \$1.61 1/4 per 100 lbs. but no buyers. Second hands are asking \$1.62 1/2 for spot. Buying for future delivery is very quiet and consumers are not offering over \$1.50.

FINANCIAL NOTES.

Average Prices of Metals

in New York per pound from January 1, 1898:

Month	Copper	Tin	Lead	Spelter
January.....	14 75	22.48	4.18	5.34
February.....	14.50	22.20	4.49	6.28
March.....	14.50	22.20	4.49	6.28
April.....	14.50	22.20	4.49	6.28
May.....	14.50	22.20	4.49	6.28
June.....	14.50	22.20	4.49	6.28
July.....	14.50	22.20	4.49	6.28
August.....	14.50	22.20	4.49	6.28
September.....	14.50	22.20	4.49	6.28
October.....	14.50	22.20	4.49	6.28
November.....	14.50	22.20	4.49	6.28
December.....	14.50	22.20	4.49	6.28
Average.....	14.50	22.20	4.49	6.28

Average Monthly Prices of Silver.

in New York per ounce Troy, from January 1st, 1899, and for the years 1898 and 1897:

Month	1899	1898	1897
January.....	60.26	56.77	64.29
February.....	59.41	56.77	64.29
March.....	59.41	56.77	64.29
April.....	59.41	56.77	64.29
May.....	59.41	56.77	64.29
June.....	59.41	56.77	64.29
July.....	59.41	56.77	64.29
August.....	59.41	56.77	64.29
September.....	59.41	56.77	64.29
October.....	59.41	56.77	64.29
November.....	59.41	56.77	64.29
December.....	59.41	56.77	64.29
Year.....	58.26	56.77	64.29

The statement of the United States Treasury, on Thursday, Mar. 16th shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

	Mar 16,	Change
Gold.....	\$21,737,842	I \$5,428,75
Silver.....	4,593,638	D 1,011,74
Legal Tenders.....	14,761,040	D 425,466
Treasury Notes, etc.....	1,140,252	D 125,123
Totals.....	\$21,737,842	I \$5,428,75

Treasury deposits with national banks amounted to \$90,590,514, a decrease of \$6,319,075 during this week.

Gold and Silver Exports and Imports.

At all United States ports, October 1898, and year from January 1st, 1898 and 1897:

FEBRUARY	
Gold—	1898
Exports.....	\$1,030,418
Imports.....	6,162,781
Excess.....	I \$5,132,369
Silver—	1898
Exports.....	\$3,759,771
Imports.....	2,085,635
Excess.....	I \$1,674,136

YEAR	
Gold—	1897
Exports.....	\$3,080,075
Imports.....	13,656,995
Excess.....	I \$10,576,920
Silver—	1897
Exports.....	\$8,061,861
Imports.....	4,621,096
Excess.....	I \$3,440,765

This statement includes the exports and imports at all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

WANTS

Advertisements of this class containing not more than five lines will be inserted for not exceeding three months in any year, free of charge, in all our publications. Other than above \$100 per annum. Advertisements not accepted for less than one month.

COPPER MINE. State full particulars in regard to development work location, distance from water, price of fuel, character of ore and returns from shipments. Must have at least 1500 feet of development work. Send all information possible. Address,

JAMES HOWARD,

Care JOURNAL Office,

150 Nassau St., New York, N. Y.

GOLD mine anywhere in United States, must have at least 1000 feet of development; where coal is not over \$6.00 per ton or wood \$4.00 per cord delivered; plenty of water; no objection to low grade ore if profit can be made by having large plant to amalgamate and concentrate; want 6 months working bond; no property considered unless owners are prepared to deposit certified check to be forfeited for expenses of engineer if property is not as represented. Address with price and full particulars,

J. E. M., Journal Office,
150 Nassau Street, New York, N. Y.

EXPERIENCED Assayer and Cyanide operator desires engagement. The successful and economical treatment of silty ore or tailings by cyanide a specialty.

ADDRESS W. V. WATSON,
Riy, White Pine Co., Nev.

METALLURGIST and Chemist, ten years experience, assaying, ore buying and smelting, at present engaged with large private smelting company in Mexico, desires engineering position in States or British Columbia. "W. H. C." JOURNAL Office.

EXPERIENCED man desires position, who can install, run and keep in repair steam electrical and mining machinery, has knowledge of assaying and office work. References. Address

W. H. K., McClellan, Cal.

FOR SALE!

TWO-THIRDS interest in well developed gold mine in Dona Ana County, N. M. See Ad page 71

A GROUP of 4 Copper claims in Northern Arizona. By product of gold and silver, recently discovered and show great promise will sell at a great bargain.

P. R. HOSKINS, JR.,

Kansas City, Mo.

TRIMAIN Two Stamp Steam Mill at Tucson, Arizona. 15-H P. Boiler Pump and every thing complete, set up ready for work. In excellent condition, used less than six months. Address DREDGING MINING MACHINERY, Kansas City, Mo.

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PROSPECTORS having locations of this nature and wishing to sell at once for cash, will do well to address with full particulars

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A VERY valuable, extensive Lead Mining Property in Southwest Virginia. Shaft sunk over 200 feet and actual work has demonstrated richness of veins and purity of ore. Address: GEORGE FRANK, Baltimore, Md.

FOR SALE AT A BARGAIN

A 60-TON copper smelting plant, consisting of two 30-ton furnaces, one of which has new, seamless liner. Plant is complete in every detail. Also an 80-ton Silver Lead Furnace entirely new, never having been set up. All of the above located immediately adjacent to railroad. Enquire of CARPENTER, WORTHEN & CO., Dealers in Mining and Mill Supplies, Tucson, A. T.

The Cleveland Mining and Stock Exchange Co.

New England Building, Cleveland, Ohio.

A Reliable Information Bureau for Miners and Investors to obtain FACTS regarding Capital and Mines. Stocks and Mines listed. Send for prospectus.

Morgan-Watson Mining and Construction Co.

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MINES AND STOCKS { We Buy, Sell, Lease and Bond Mines of all kinds
We Buy, Sell, and Negotiate sales of mining and other stocks.
We Furnish machinery to work good mines under special arrangement
We Furnish Capital to develop mines.

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Largest and most complete establishment in Southern California Cyanide and Mill Test.



Mint Prices paid for Gold and Silver Bullion. Returns made within four hours after receipt.

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ALL THE MINING CAMPS OF UTAH AND COLORADO ARE LOCATED ON OR REACHED BY

The Rio Grande Western Ry.

THE SHORTEST, QUICKEST AND MOST DIRECT ROUTE TO

MERCUR AND CRIPPLE CREEK

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The Johannesburg of America, New and Wonderful Camp only 45 miles from Salt Lake City, Utah.

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The Greatest Gold Camp in the World, only six years old and two hundred shipping mines in the district.

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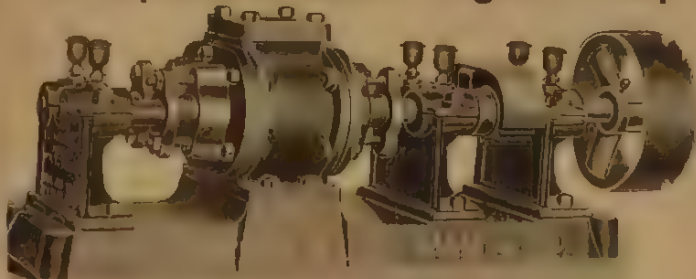
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The illustration shows the gigantic pumping plant recently built by the Hercules Gas Engine Works at the Parker Ranch, Colusa Co. 80 h. p. Hercules Engine pumping 7700 gallons a minute. 27 inch. Bore Gasoline or Distillate oil. Cheapest power known. Gasoline and oil engines 2 to 800 h. p. Send for Catalogue. HERCULES GAS ENGINE WORKS, 816 Bay St., San Francisco.

The Improved WONDER Irrigation Pump



We also Build Vertical Style for Mining Purposes.
Write for full particulars and Catalogue.

Wonder Pump Mfg Co.,

KANSAS CITY,
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Established 1887

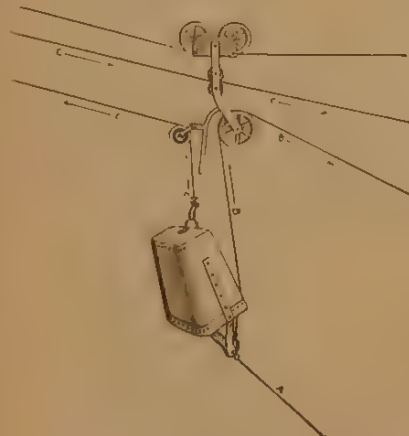
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Chemical Analysis, Milling, Concentration and Cyanide Tests

Call and See our Stamp Mill and Frue Vanner

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HALL
PATENTCable Hoist
CONVEYORFOR
Excavating Canals
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Used in Excavating the Suwanee Canal, Georgia. Only system with a bucket that is absolutely self-filling. Also adapted to the construction of levees and embankments.

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Send for Catalogue

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In Canada, June 21, 1896.

Send in your opinion as to the Formation of the
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THOMAS PRICE & SON

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Leave Los Angeles, 10 20 a. m.
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Arrive Barstow 3 15 p. m.
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Arrive Kramer 5 05 p. m.
Arrive St. Elmo, 8 15 p. m.
Arrive Johannesburg 6 50 p. m.

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Johannesburg 9 00 p. m.
Arrive San Bernardino 5 35 a. m.
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A through passenger coach is run between Barstow and Johannesburg.

Through tickets and particulars of any Santa Fe Route Agent

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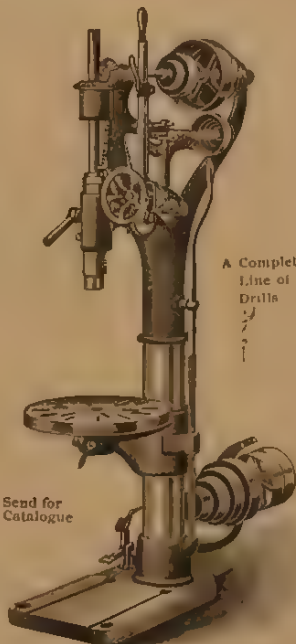
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Reliable Assays

Gold.....\$.50 Copper.....1.00
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Gold & Silver..75 Gold, Silver, & Copper 2.00
Lead......50 Gold, silver, copper, lead 2.00
Samples by mail receive prompt attention.
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Line of
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THAT ARE MADE BY

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FOR ALL PURPOSES.
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A High Grade Gold Mine

Two thirds interest in a well developed gold mine in Dona Ana County, New Mexico. A few miles from railroad. Property has not been worked since 1895 on account of ill health of owner who is an eastern man. Mine makes about 1200 gallons of water in 24 hours—sufficient for working purposes. Has 500 feet development work consisting of shaft and drift. Wood costs \$3 per cord delivered; coke is to be had from 100 feet. Instead. Porphyry is granite with porphyry and spars. In a fault vein 5 to 6 feet wide. Pay streak 4 to 6 inches at the surface with value of \$1200, with only 10 feet at bottom of 195 foot shaft having a value of \$1500. Ore taken out concentrated 340 to the ton which ore shipped averaged \$63 per ton. The property is now owned by two men, one owning two thirds and the other one-third. The owner of the two-thirds is desirous of selling his controlling interest, and arrangements can be made for the purchase or bonding of the remaining third upon reasonable terms.

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Of Power Transmission, Appliances, Patent and Roll 1400 shafting Cast Iron Pulleys, Couplings, Ball and Socket self-aligning hangers, Floor Stands, Wall Frames, Belt Tighteners, Wire Rope Snatchers, Band and Fly Wheels, Rope Transmission. Also valuable notes on engineering.

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Guaranteed to
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STEAM

Best and
Most
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Can be had of

TO BOILER

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American Injector Co., Detroit, Mich.
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SUGGESTION TO
VICTOR BISHOP & CO

IMPORTER OF
CARBONS
FOR DIAMOND DRILLS.

MAIDEN LANE

NEW YORK.

INCORPORATED MINES PAYING DIVIDENDS.

NAMES OF MINES	LOCATION	No. of Shares	Capital Stock	Par Value	Amount of Last Dividend	Date of Last Dividend	Total Amount Paid in Dividends	Kind of Minerals Produced
1 Astor Cons.	California	100,000	\$ 500,000	\$ 5	\$ 10	Jan 1899	\$ 100,000	Q
2 Alaska, Fredwell	Alaska	200,000	5,000,000	25	37 1/2	Jan 1899	1,205,000	G
3 Alaska Mexican	Alaska	200,000	1,000,000	5	10	Jan 1899	345,031	G
4 Alice	Montana	400,000	10,000,000	25	0 1/2	April 1898	1,075,000	G, S, L
5 Anaconda	Montana	1,200,000	30,000,000	25	1 25	Nov 1898	3,250,000	G
6 Anchor Island	Colorado	800,000	800,000	1	03	Jan 1899	192,000	G
7 American Gold	Colorado	300,000	3,000,000	10	07	Oct 1898	302,000	G, S, L
8 Associated	Colorado	1,250,000	1,250,000	1	01	Dec 1898	72,000	G
9 Aurora	Michigan	100,000	2,000,000	25	50	May 1898	750,000	L
10 Bad Boy	Montana	250,000	250,000	1	06	Dec 1898	619,838	G, C, S
11 Big Six	Colorado	500,000	500,000	1	00 1/2	May 1898	1,000	G, S
12 Best and Colorado Smelting	Colorado	15,000	750,000	50	5 00	Jan 1899	300,000	G
13 Boston & Montana	Montana	150,000	3,750,000	25	5 00	Feb 1899	987,000	G, C, S
14 Breese	Colorado	200,000	5,000,000	25	05	Mar 1899	40,000	L
15 Bullion Rock and Champion	Utah	100,000	1,000,000	10	10	Feb 1899	2,575,000	G, S
16 Bonker Hill and Sullivan	Idaho	300,000	3,000,000	10	07	Feb 1899	642,000	S, L
17 Carbon	British Col	800,000	800,000	1	02	Aug 1898	236,905	G
18 Calumet & Hecla	Michigan	10,000	2,500,000	25	10 00	Mar 1899	60,850,000	G
19 Centennial Eureka	Utah	30,000	1,500,000	50	50	Feb 1899	2,500,000	S, L
20 Central Lead	Missouri	10,000	1,000,000	100	50	Feb 1899	0 000	L
21 Champion	California	34,000	340,000	10	25	April 1898	206,200	G
22 Charleston	S. Carolina	10,000	1,000,000	100	1 50	Dec 1898	186,000	G
23 Colorado Smelting	Montana	100,000	1,000,000	10	1 00	Jan 1899	1,910,000	G, S, C
24 Consolidated Tiger and Poorman	Idaho	1,000,000	1,000,000	1	02	Dec 1898	20 00	G, S
25 Creston Leasing	Colorado	1,000,000	1,000,000	1	01	Dec 1898	70 00	G, S
26 Crowned King	Arizona	800,000	8,000,000	10	02	Dec 1898	2,200,000	G, S, L
27 Deadwood Terra	S. Dakota	200,000	5,000,000	25	05	May 1898	1,350,000	G
28 De Lamar	Idaho	400,000	2,000,000	5	20	May 1898	2,451,000	S, L
29 Doe Run	Missouri	5,000	500,000	100	50	Feb 1899	65,000	L
30 Elkton Consolidated	Colorado	1,250,000	1,250,000	1	01 1/2	Nov 1898	856,961	G, S
31 Empire State	Idaho	75,000	750,000	10	10	Feb 1899	106,000	G
32 Enterprise	Colorado	500,000	500,000	1	05	Sept 1898	600,000	S, L
33 Geyer Marion	Utah	300,000	1,500,000	5	02	Sept 1898	96,000	G
34 Gold Chain of Victor	Colorado	1,000,000	1,000,000	1	01	Mar 1899	180,000	G
35 Gold King	Colorado	1,000,000	1,000,000	1	01	Feb 1899	10,000	G
36 Golden Cycle	Colorado	200,000	1,000,000	5	02 1/2	Mar 1899	164,500	G
37 Golden Reward	S. Dakota	250,000	1,000,000	15	15	Feb 1898	155,000	G
38 Grand Central	Utah	250,000	250,000	1	12 1/2	Feb 1899	281,250	G, S, C, L
39 Hall's Mines Ltd.	British Col	250,000	1,250,000	5	25	May 1898	180,000	G
40 Highland	S. Dakota	100,000	10,000,000	100	20	Mar 1899	3,811,718	G
41 Holy Terror	S. Dakota	300,000	300,000	1	03	Sept 1898	117,000	G
42 Homestake	S. Dakota	125,000	12,500,000	100	50	Feb 1899	7,306,250	G
43 Hope	Montana	100,000	1,000,000	10	10	Mar 1898	762,252	S
44 Horn Silver	Utah	400,000	10,000,000	25	07	Oct 1898	5,210,000	S, L
45 Idaho	British Col	500,000	500,000	1	05 1/2	Jan 1899	202,000	G
46 Iowa	Colorado	1,000,000	1,000,000	1	00 1/2	June 1898	90,000	G
47 Iron Mountain	Montana	500,000	5,000,000	10	02	Apr 1898	507,500	S
48 Isabella	Colorado	2,250,000	2,250,000	1	06	Feb 1899	40,000	G
49 Jersey Leasing	Colorado	200,000	200,000	1	03 1/2	Oct 1898	137,875	G
50 Le Roi	British Col	500,000	2,500,000	5	10	Apr 1898	775,000	G
51 Lath	Colorado	1,000,000	1,000,000	1	05	Feb 1899	190,000	G
52 Minnesota	Minnesota	160,000	16,500,000	100	1 50	Oct 1898	1,735,000	L
53 Modoc	Colorado	500,000	500,000	1	01	Dec 1898	110,000	G
54 Montana Ltd	Montana	800,000	3,300,000	5	05	Feb 1899	2,067,557	G, S
55 Montana Ore Purchasing	Montana	40,000	1,000,000	25	1 00	Jan 1899	880,000	G
56 Morning Star	California	2,400	240,000	100	4 00	Feb 1899	707,000	G
57 Mt. Rosa	Colorado	1,000,000	1,000,000	1	02	Jan 1898	60,000	G
58 Morcor	Utah	200,000	5,000,000	25	12 1/2	Jan 1899	1,960,000	G
59 Mammoth	Utah	400,000	10,000,000	25	05	Dec 1898	1,250,000	G, S, C, L
60 Matua	Colorado	1,000,000	1,000,000	1	02 1/2	Dec 1898	25,000	G
61 Mead	California	2,000,000	2,000,000	1	40	Dec 1898	80,000	G
62 Montreal	Colorado	1,000,000	1,000,000	1	01	Nov 1898	7,500	G
63 Monument	Colorado	300,000	300,000	1	01	Dec 1898	12,000	G
64 Moulton	Montana	400,000	2,000,000	5	05	Feb 1899	180,000	G
65 Moon Anchor Gold	Colorado	600,000	600,000	1	07 1/2	Nov 1898	281,000	G
66 Mountain Copper	California	250,000	6,250,000	25	62 1/2	Sept 1898	92,750	G
67 New York & Hon. Rosario	Central A.	150,000	1,500,000	10	10	Feb 1899	900,000	S, G
68 Napa	California	100,000	700,000	7	20	Jan 1899	90,000	G
69 New Idria Quicksilver	California	100,000	500,000	5	20	Jan 1899	100,000	G
70 North Star	California	200,000	2,000,000	10	25	Nov 1898	500,000	G
71 Ophir Hill	Utah	1,000	25,000	25	20 00	Dec 1898	20 00	G
72 Osceola	Michigan	50,000	1,250,000	25	2 00	Dec 1898	2,552,000	C
73 Parrot	Montana	230,000	2,300,000	10	30	Feb 1899	2,275,898	C
74 Pennsylvania Consolidated	California	51,500	5,150,000	10	05	Feb 1899	65,000	G
75 Pioneer	California	100,000	1,000,000	10	12 1/2	Dec 1898	50,000	G
76 Portland	Colorado	3,000,000	3,000,000	1	02	Feb 1899	2,230,081	G, S
77 Plumbago	California	300,000	300,000	1	15	Jan 1899	4,000	G
78 Quincy	Michigan	100,000	2,500,000	25	3 50	Feb 1899	10,170,000	C
79 Raven	Colorado	1,500,000	1,500,000	1	01	March 1898	20,000	G
80 Republic	Washington	1,000,000	1,000,000	1	01	Jan 1899	150,000	G
81 Sacramento	Utah	1,000,000	5,000,000	5	00 1/2	Feb 1899	67,000	G
82 Small Hopes Consolidated	Colorado	250,000	5,000,000	20	10	Feb 1899	3,450,000	S
83 South Swansea	Utah	150,000	150,000	1	05	Oct 1898	125,000	S, L
84 Standard	California	200,000	20,000,000	100	10	Aug 1898	5,749,910	G, S
85 St. Joseph	Missouri	30,000	3,000,000	10	1 50	Dec 1898	2,781,000	L
86 Silver King	Utah	150,000	3,000,000	20	25	Feb 1899	1,837,500	S, L, G
87 Smuggler	Colorado	1,000,000	1,000,000	1	01	Jan 1899	1,105,000	S, L, Z
88 Swansea	Utah	100,000	500,000	5	05	Feb 1899	160,000	S, L
89 Tamarack	Michigan	60,000	1,500,000	15	4 00	Dec 1898	5,000,000	C
90 Tanboy	Colorado	200,000	2,000,000	10	25	Dec 1898	650,000	G
91 Utah	Utah	100,000	1,000,000	10	02	Jan 1899	170,000	G
92 Victor	Colorado	200,000	1,000,000	5	50	Dec 1898	1,155,000	G
93 Vinhooker	Colorado	1,500,000	1,500,000	1	05	Jan 1899	180,000	G
94 War Eagle	British Col.	2,000,000	1,000,000	1	01 1/2	Feb 1899	230,000
95 Wolverine	Michigan	60,000	2,500,000	25	1 00	Oct 1898	60,000	C
96 White Water	British Col.	125,000	1,250,000	5	32	April 1898	194,000	G
97 Yellow Aster	California	100,000	1,000,000	10 1/2	10	Jan 1899	168,789	G

S. Silver; G. Gold;

L. Lead; C. Copper;

Q. Quicksilver;

I. Iron;

Z. Zinc.

N. B.—Companies not listed have not paid a dividend for the last twelve months.

THE CAMMET CONCENTRATOR

The Most Recently Developed and Scientifically Designed Concentrator on the Market

PRICE, including All Extra Attachments complete, f. o. b.
Denver, \$450

We do not tell you that this Concentrator will take the place of two or three Belt Machines—you are supposed to be intelligent enough to know this. We do tell you, however, that this concentrator will do more work than any Concentrator on the market.

Thoroughly protected by strong patents

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THE NEW "LEYNER" ROCK DRILL



A NEW PRINCIPLE.



IT WILL INTEREST YOU BECAUSE :

It requires less than one-half the air required to operate rock drills of the ordinary piston type.

It weighs less than one-half as much as the ordinary rock drill and is consequently easier to handle.

And other Good Points all explained in Catalogue, Sent on Application.

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THE EDWARD P. ALLIS CO.,
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Sullivan Diamond Prospecting Drills

FOR PROSPECTING FOR and DEVELOPING MINERALS

Rock Drills for Sinking, Drifting and Stopping



Knight & Stone, Agents, Spokane, Washington
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The Detroit Lubricators Are Best for MINING ENGINES

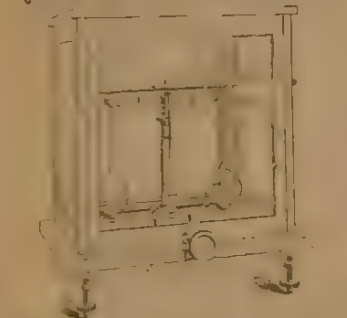
They are extra strong and durable, each one being tested at 300 lbs. pressure before being sent out, and they are always Efficient and Reliable.

Over 400,000 of Them are in Use.

Send for Catalogue, giving full details

DETROIT LUBRICATOR CO., Detroit, Mich.

QUEEN NO. 4 ASSAY BALANCE



Agate Knives and Planes
Sensitivity 1-100 mg. The Best Low-Price Assay
Balance on the Market. Send for Circular

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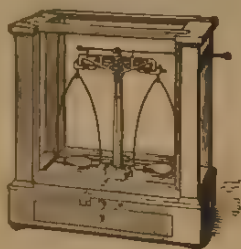
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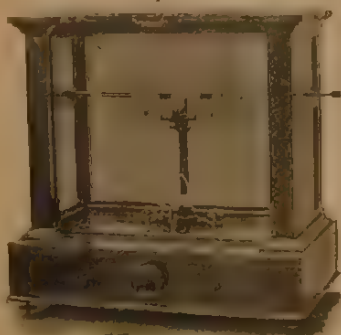
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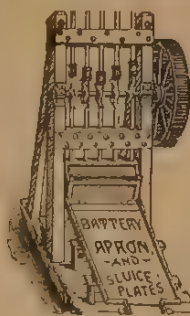
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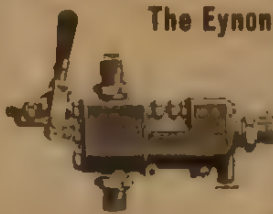


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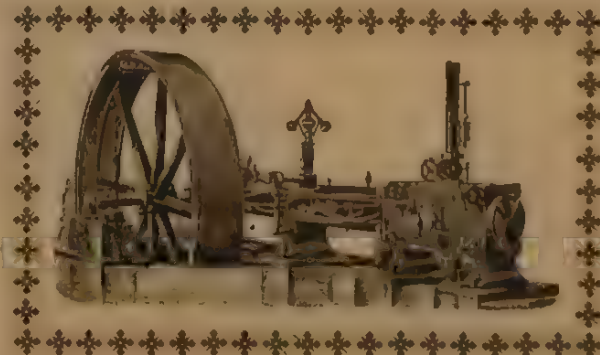
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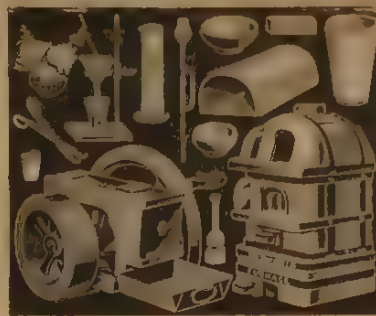
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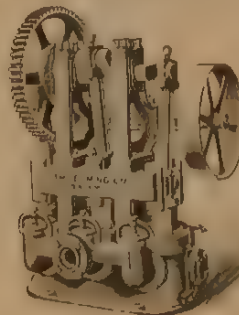
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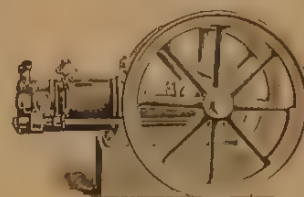
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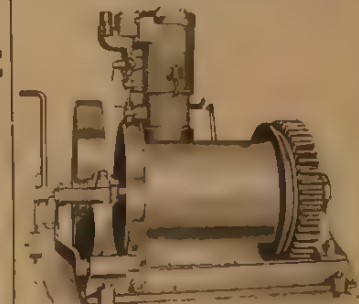
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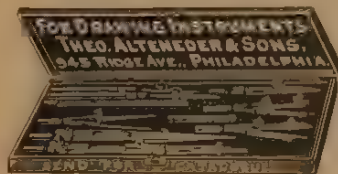
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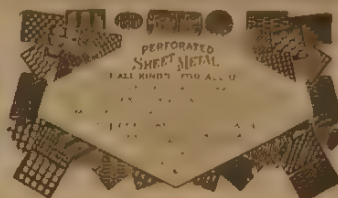
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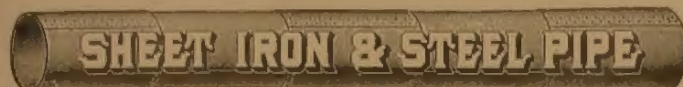
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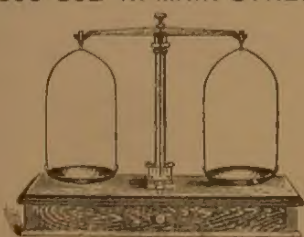
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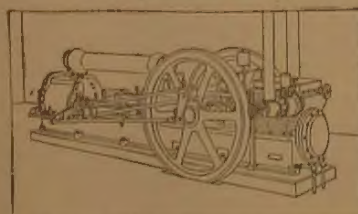
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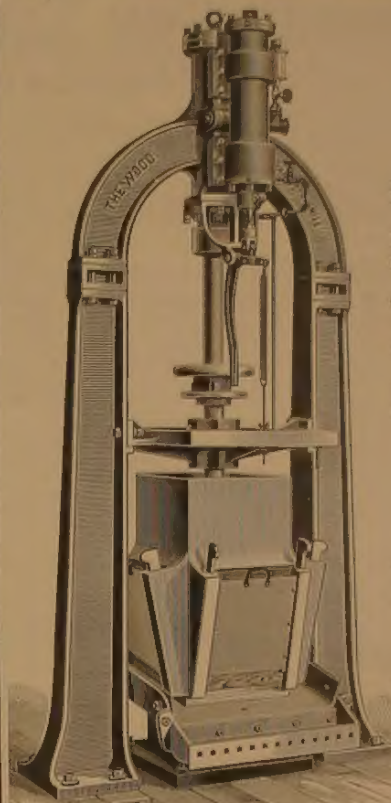
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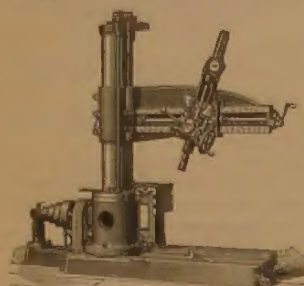
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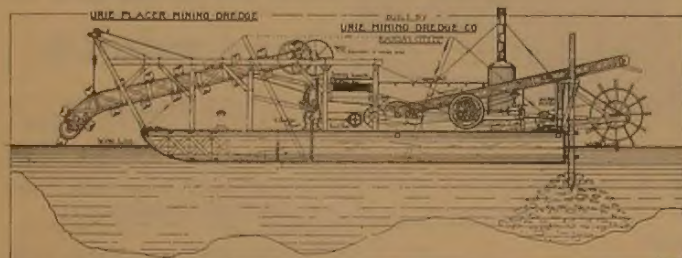
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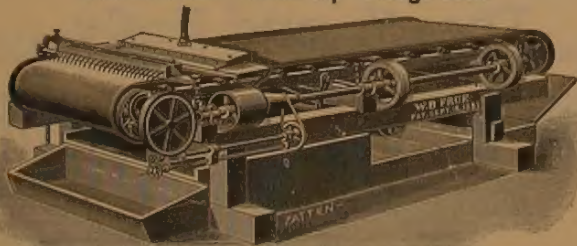
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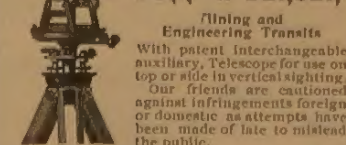
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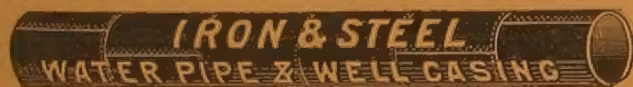
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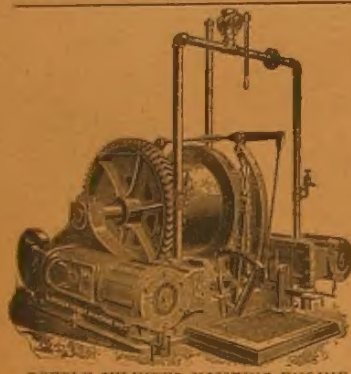
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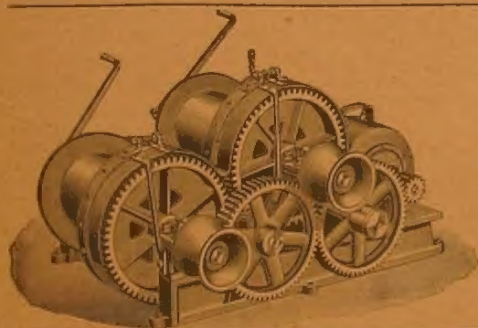
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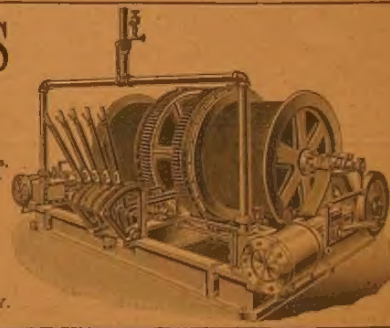
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